DECEMBER 1959

FOOD PROCESSING®

THE MAGAZINE OF APPLIED TECHNOLOGY
FOR MEN WHO MANAGE

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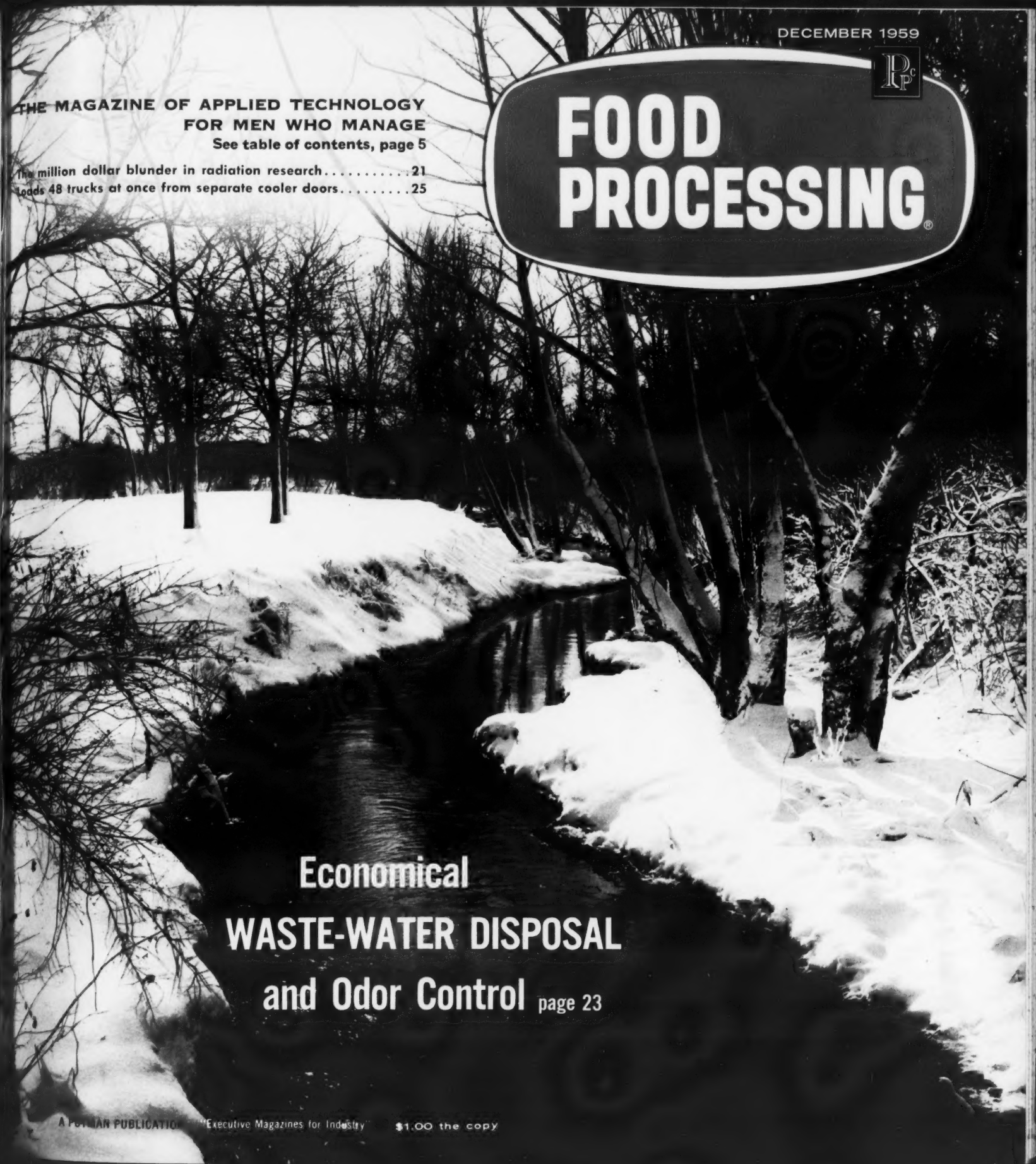

Economical WASTE-WATER DISPOSAL and Odor Control

page 23

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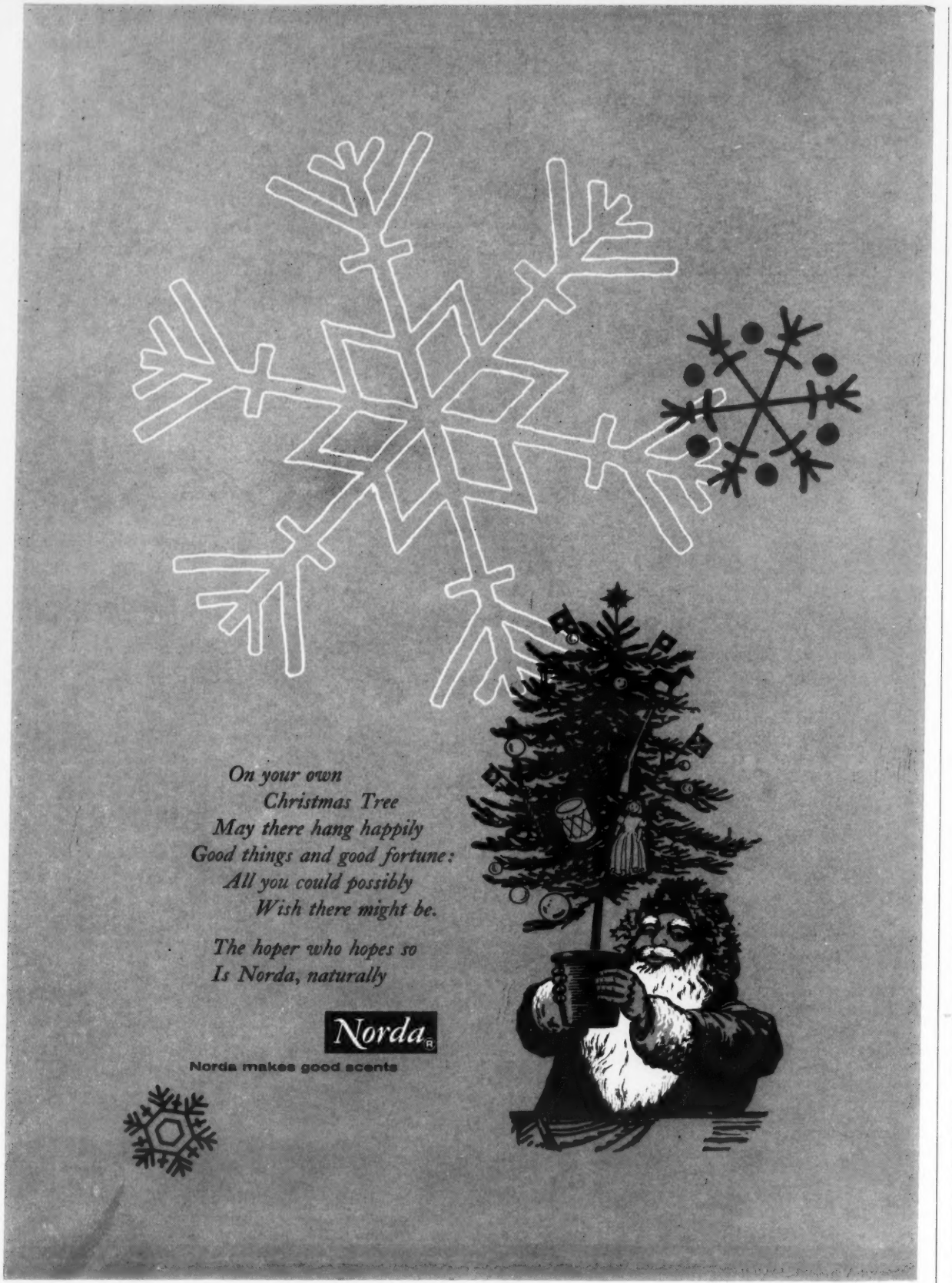

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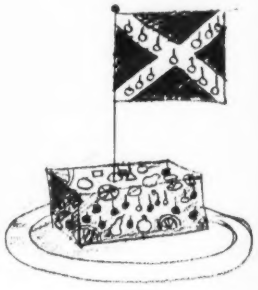
that's interesting

Fruit cake mightier than sword (Suh!)

The holiday fruit cake — achievement of Southern plantation living — will have completed its invasion of Yankeeland by the time the Civil War centennial comes up in 1961, predict the men who process glace cherries, which make up 16.4 per cent of the usual fruit cake.



Statisticians of the Cherry Growers and Industries Foundation note that Northern fruit cake consumption is increasing at an average annual rate of about five per cent.

Some Products Are Marvelous

From a "near-casualty" of World War II, SPAM has made a remarkable recovery — recently appearing in its one-billionth can (which was patriotically presented to the American people by Geo. A. Hormel & Co.). SPAM's powerful wartime enemy — military humor — took the form of cartoons, gripes, anecdotes and jokes generated by citizen-soldiers who had been used to greater variety in their vittles.

However, since the war, SPAM has overcome its traumatic experiences, has benefited from ever-growing consumer hunger for products that combine ease of preparation and use with quality. Currently, SPAM is the leading spiced luncheon meat, with approximately a 40 per cent share of the 180-million-can, $80 million national luncheon meat market.

How about Christmas seal?

A gift always in good taste, according to National Live Stock and Meat Board, is a gift-wrapped meat item. Unlike the more liquid gift, this one can be enjoyed by every member of the family.

Core of the trouble

"Bitterness" in carrots held in apple storages for later processing has been traced to chemical changes in the carrots. Culprit is a volatile gas — probably ethylene — given off in minute amounts by the ripening apples.

Solution recommended is to provide air-tight walls for carrot storage — in addition locate room entrances so that gases cannot pass from room to room. Details of investigation appear in October issue of "Farm Research", available from New York State Agricultural Experiment Station, Geneva, N.Y.

Lavish gifts do not win friends

. . . but they may influence business people. Actually, Christmastime mink coats, Cadillacs and oriental rugs (or even Vicuna coats and Volkswagens) may defeat the purpose by appearing to be an outright bribe with strings attached.

Folder, "Business Gifts at Christmas — Good or Bad?," available from The Business Goodwill Advisory Council, 1145 Nineteenth St., N.W., Washington 6, D.C., lists seven basic rules to follow in giving business gifts:

1) keep gifts of modest value in relation to importance of recipient;
2) choose gifts individually;
3) choose useful, quality gifts;
4) personalize the gift, if possible;
5) package attractively;
6) include a personal note or card;
7) deliver each gift with a flair.

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THE MAGAZINE OF APPLIED TECHNOLOGY
FOR MEN WHO MANAGE

FOOD PROCESSING

DECEMBER 1959
VOL. 20 NO. 12

CIRCULATION OVER 39,000

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Commentary on cancellation of the long-planned-for Ionizing Radiation Center at Stockton, Calif. — Norb Leinen, Associate Editor

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Armour's Automation Plan helps dispel the individual fears of the man who may be replaced in his job by a machine — Joe Voorhees, Associate Editor

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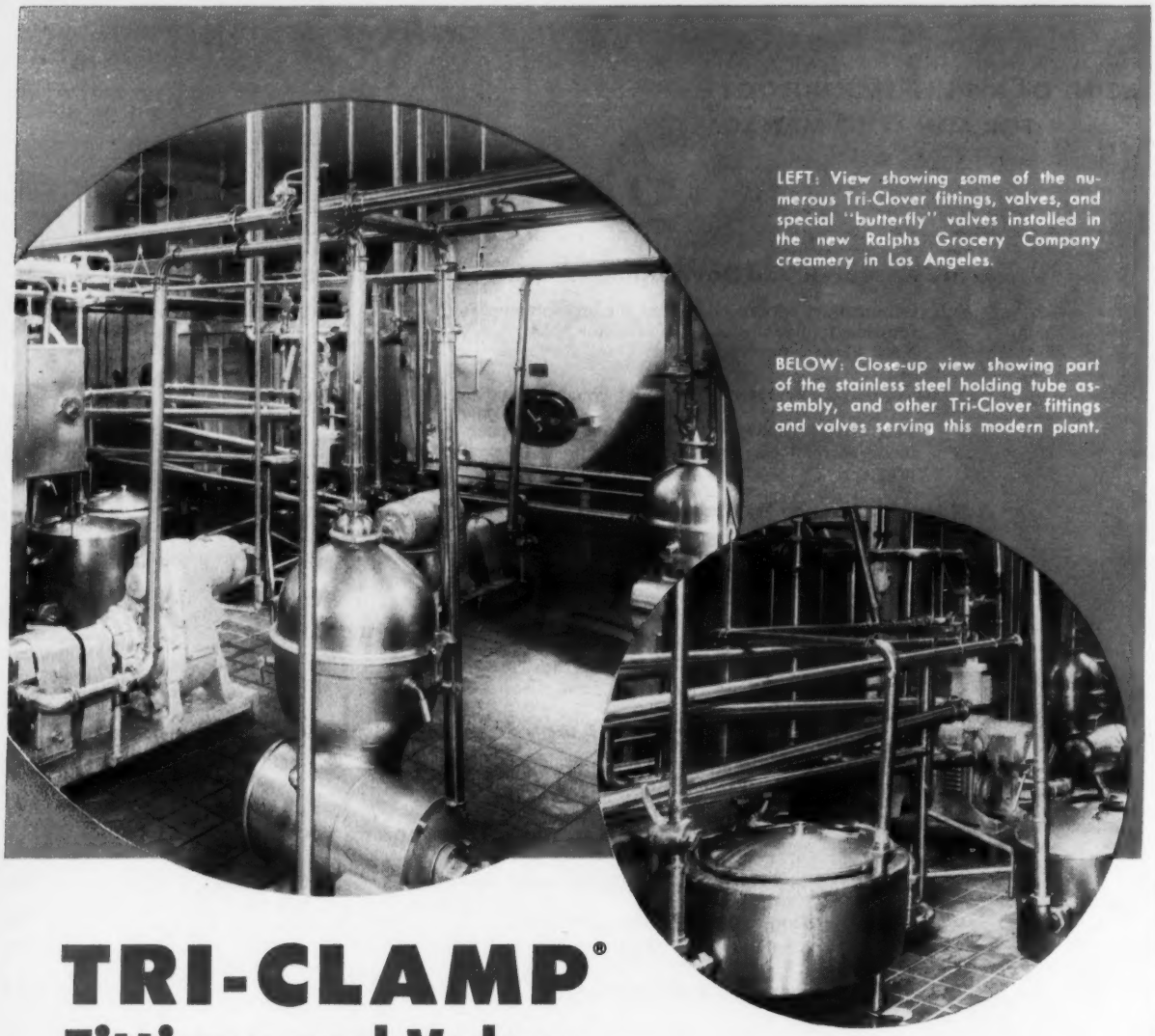

LEFT: View showing some of the numerous Tri-Clover fittings, valves, and special "butterfly" valves installed in the new Ralphs Grocery Company creamery in Los Angeles.

BELOW: Close-up view showing part of the stainless steel holding tube assembly, and other Tri-Clover fittings and valves serving this modern plant.

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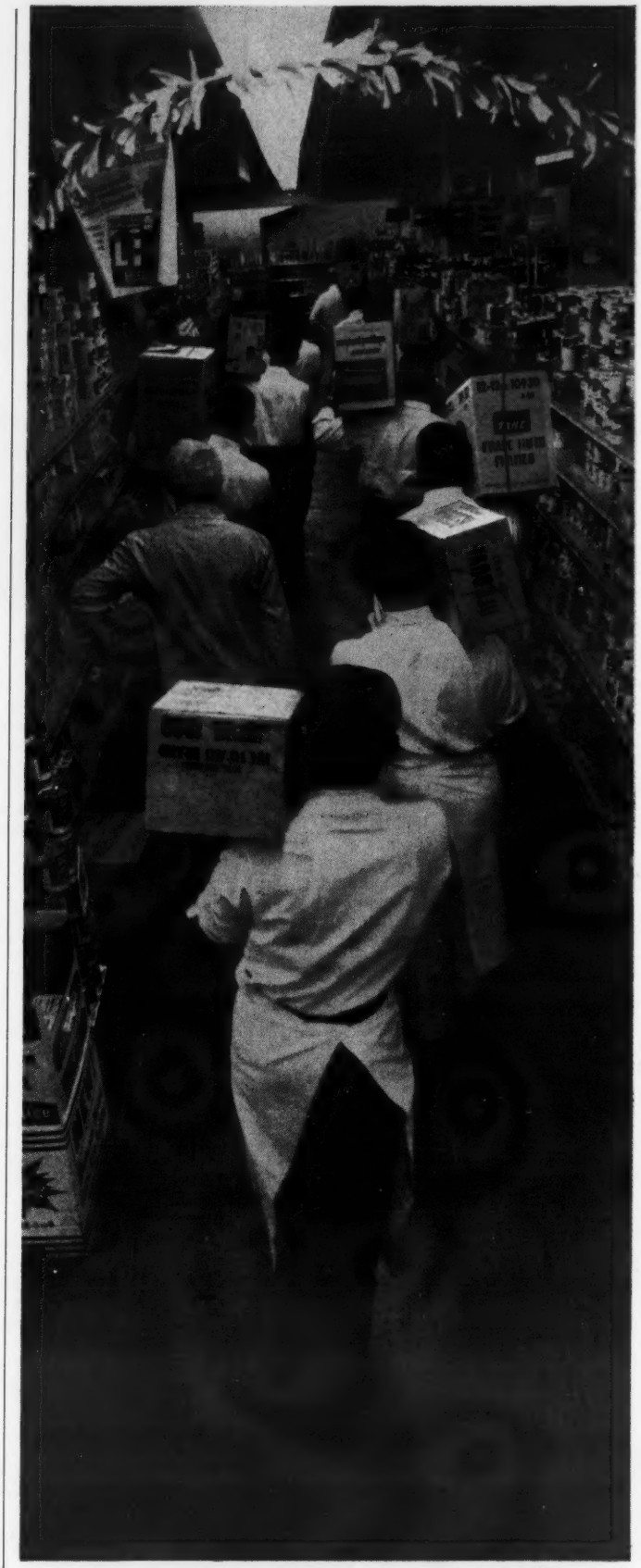

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The nostalgic winter scene on the cover — which points up the benefits of a new solution to waste-water disposal and odor control — also serves as appropriate background for some year's-end reminiscing by FOOD PROCESSING's editors as they look back over the past 12 months of decisions, developments and deadlines — and extend

Season's Greetings

To all the Research Directors who, back in the January and February issues, provided readers with a "focus on 1959's technical problems:"

—Charlie Kaufman of National Dairy Products and The Packaging Institute
—Paige Lehman of The Pillsbury Company
—H. E. Robinson of Swift
—Ray Wakefield of Gerber
—Minute Maid's Wallace R. Roy
—Bob Schaffner of Libby, McNeill & Libby
—Carnation Company's P. K. Bates
—R. K. Pedersen of Star Kist Foods
—The Kroger Foundation's George Garnatz
—C. L. Rumberger of Heinz
—Justin Alikonis of Paul F. Beich
—N. L. Schleifer of Falstaff Brewing
—Fritzsche Brothers' Ernest Guenther—who also writes remarkable travel letters.

Seasons Greetings to Bill Coors, first US brewer to make his own aluminum cans,

To the Quartermaster's "Pat" Cosler, and his zein acetoglyceride coating,

And to the IFT Committee on Education, in its crusade to raise the food curriculum to a truly professional level.

A very special greeting to the grand pioneers:

—Dr. Sam Prescott of MIT
—Dr. Roy Newton, just retired at Swift
—Dr. Larry Burton and Dr. Berton Clark.

And, speaking of pioneers, to Seabrook Farms for pioneering "boil-in-bag" foods,

And, of course, to Harve Hearl, now with Armour, for the creative way he's "sold" the boil-in-bag idea.

Greetings to George Meany and to Fred Allan Hartley, Jr., who disagree about the "right to work."

And to Refined Syrups and Sugars, which has led the way in hiring older people with special skills.

Merry Christmas to George Larrick and John L. Harvey of FDA—and to all the Identity Standards;

To Calpak's President Roy Lucks, whose contagious excitement over canning has helped make Calpak biggest.

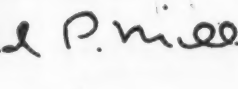
And to such "new-old" firms as The Pillsbury Company and National Starch & Chemical Corporation.

Season's Best to Albert L. Elder of Corn Products, president-elect of the ACS,

And to H. J. Heinz II, who told on these pages how to live dynamically (not just exist) in a profit-squeeze era.

Greetings, too, to all the bright young men who, in 1959, became assistant vice presidents, plant managers or special assistants to the president.

And, certainly not least, MERRY CHRISTMAS to all of you who read FOOD PROCESSING (always), and write us letters (sometimes) and keep us on the ball in reporting major developments in the fast-moving food industry!



FDA ADOPTS AS BASIC POLICY THE CONTROVERSIAL DELANEY "CANCER CAUSE"

No tolerance for any additive if it causes cancer even under unrealistic conditions

The Department of Health, Education, and Welfare has gone on record as opposing any attempt to take the controversial Delaney "cancer clause" out of the Food Additives Amendment.

This clause prohibits FDA from setting any tolerance for any amount of a food additive if it produces cancer when fed to test animals.

HEW Secretary Arthur Flemming also said they will support inclusion of the no-tolerance provision in the color additives bill pending before Congress.

The statement of policy was prompted by the disclosure — subsequently widely publicized — that Northwest cranberries and possibly cranberry products may be contaminated with a weedkilling chemical, aminotriazole.

FDA says the weedkiller causes cancer in the thyroid of rats. There is no scientific evidence that it produces cancer in humans.

In testing with rats the lowest concentration of the chemical used was 10 parts per million parts of food. Residue found in the contaminated cranberries was one tenth of one part per million.

Although the earlier Pesticide Amendment which is applicable to cranberries does not contain a cancer clause, the no-tolerance principle is being applied in this case.

Industry officials, irate over the way the Government handled the story, have plans under way to eliminate all contaminated fruit. Further, no cranberries are being shipped without inspection. Members of the cranberry association have also been instructed not to use aminotriazole in any manner.

Following release of the cranberry saga, the National Agricultural Chemicals Association issued a statement which read in part:

"According to competent toxicologists who have extensively studied the chemical in question, the extremely small amounts present on cranberries could not offer any significant risk to the consumer. They point out that tumors were found in rats only after a lifetime of feeding on a diet containing approximately 100 times as much of the chemical as has been found on the contaminated lots of cranberries, and that cranberries constitute only a small fraction of the total human diet. They further point out that humans would have to subsist almost entirely on a diet of these cranberries for years in order to approximate the conditions which cause tumors in the test animals."

Advance cut-off date for delisted colors

Under a new FDA order, removal of a coal-tar color from the list of permitted colors prohibits future sales or use of that color in products for which it was formerly certified.

In the past, delisting actions have not prohibited sale

(*Continued on next page*)

New smoke-flavored malt seasoning

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food regulations

Safe lists of additives, which FDA is expected to release the latter part of November, will be published in full in January FOOD PROCESSING.

(*Continued from preceding page*)

or continued use of batches of colors previously certified. Now, products made with the banned colors after specified cut-off dates will be considered adulterated and thus illegal under the FD&C Act.

Products made with FDA-certified colors prior to the cut-off dates will not be considered adulterated even though they may contain the banned colors — unless it is determined that existing stocks cannot safely be used, FDA said. In that case, special regulations covering the situation will be issued.

FDA prepares to enforce standards for French dressing

FDA is ready to move against certain dressing products labeled as, or apparently purporting to be, "French dressing", a standardized food.

Results of a recent market survey of French dressings reveal a "rather wide range of products," an FDA spokesman said recently. The labels included various proprietary names, but the products may be grouped in three categories, he said:

1. Dressings directly represented by the labeling as French dressing, but low in oil content.

2. Distinctively named products generally meeting the standard for French dressings except for low oil content, but differing only in trivial ways.

3. Products with distinctive names intended to have properties differing from French dressing. These have a distinct characterizing ingredient such as a substantial amount of nuts or sugar.

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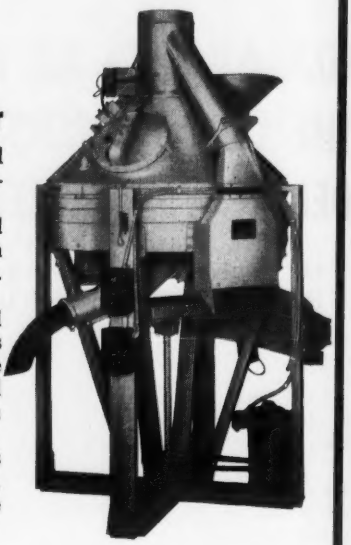

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Products in the first category require regulatory action as do those in the second, according to the extent of consumer deception involved, FDA says.

The third class of products, while not running afoul of the standard, will need to comply fully with other labeling requirements of the FD&C Act. This means a complete statement of ingredients by their common or usual names.

The emulsifying agent, for example, if one is used, cannot be declared as "emulsifier" as in the case of the standardized food, French dressing. There the standard itself specifies those that may be used.

Preservatives, whether added directly or by the manufacturer of some ingredient, such as the oil, are to be declared by their common names (even though the only common name may be some jawbreaker such as Butylated Hydroxytoluene), and the fact that they are preservatives must be disclosed.

Current experience, FDA says, shows that in recent years there has been widespread noncompliance in the food field with such labeling requirements.

P&G gets permission to use emulsifier with "jawbreaker" tag

FDA has given Procter and Gamble the go-ahead on their food additive petition to use an emulsifier in or with shortening.

The emulsifier is a mixture of mono- and diglycerides and their lactic acid monoesters, manufactured by the glycerolysis of hydrogenated soybean oil and subsequent esterification with lactic acid. The food additive must meet the following specifications:

Total lactic acid content, 4.7 per cent to 13.0 per cent; Monostearin content, 5 per cent to 25 per cent; saponification number 190 to 250; acid number 2 to 14.

The lactic acid monoesters

(*Continued on next page*)

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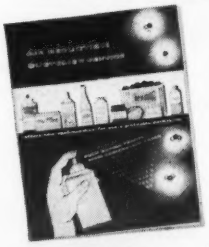
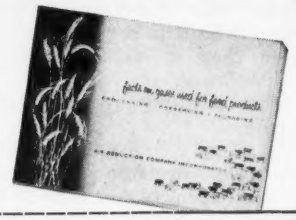


"New Opportunities for More Profitable Packaging" takes the reader on an interesting picture trip through Air Reduction's Customer Service Packaging Laboratory. It also explains how our representatives — both in the field and in the "lab"—will aid you in solving packaging and processing problems involving the use of compressed gases.

"Facts On Gases Used for Food Products" covers many profitable applications of compressed gases in the processing, preserving and packaging of food products... improved appearance and shelf life plus higher consumer acceptance.



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Please send, without obligation, the material requested below:
☐ "NEW OPPORTUNITIES FOR MORE PROFITABLE PACKAGING"
☐ "FACTS ON GASES USED FOR FOOD PRODUCTS"

Name.....
(PLEASE PRINT OR TYPE)
Title.....
Company.....
Address.....
City.....Zone.....State.....

5900 on Reader Service Slip.

(*Continued from preceding page*)

must not exceed 8 per cent of the combined weight of the shortening and the food additive.

The label of any shortening and/or finished food product containing the additive must bear the name "glyceryl lactostearate and mono- and diglycerides" or "lactostearin (a mixture of glyceryl lactostearate and mono- and diglycerides)."

Will FDA interfere with labeling of chocolate cookies?

Under active consideration by FDA is the question of the proper labeling of "chocolate" products. FDA's view is that a product may be called "chocolate" only if the entire flavoring ingredient is chocolate liquor. If it is a mixture of chocolate liquor and cocoa, or only cocoa, then it should be termed "chocolate flavored."

The Biscuit & Cracker Manufacturers' Association in a meeting with FDA took the position that cookies made from a mixture of chocolate liquor and cocoa traditionally have been called "chocolate." From the consumer's standpoint, the word "chocolate" on the label denotes a chocolate flavor or taste.

The term "flavored," therefore, BCMA says, would not only be redundant, but would imply that something other than chocolate or cocoa had been used to obtain the familiar flavor.

The industry group said further:

"It must be recognized that the term 'chocolate' embraces a broad spectrum in taste and flavor. We believe that any requirement that only chocolate liquor be used in cookies or wafers or cake, which are called 'chocolate,' is an unrealistic attempt to define 'chocolate' flavor according to a specific formula. It is as much a subjective determination by the consumer as objective in the choice of ingredients by the manufacturer."

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5901 on Reader Service Slip.

As a practical matter, it was pointed out that a chocolate cookie could not be made commercially using only chocolate liquor, but had to be a mixture of chocolate liquor and another derivative of cacao, such as cocoa.

BCMA and FDA are in agreement that coatings designated as "chocolate" should be made entirely of chocolate liquor.

FDA has suggested that the industry might consider sponsoring a consumer survey to determine the understanding of the meaning of the term "chocolate."

Vitamin E required in human nutrition but . . .

Products represented as containing vitamin E no longer have to bear a label statement that the need for this vitamin in human nutrition has not been established.

FDA says that recent evidence shows that vitamin E is needed in human nutrition. Scientific studies demonstrate further that the daily diet provides more than adequate amounts of the vitamin for the average individual, and that the vitamin E utilized in the physiological processes of the human body is that derived only from the diet.

Therefore, "any claim in the labeling of drugs or of foods offered for special dietary use by reason of vitamin E, that there is need for dietary supplementation with vitamin E, will be considered false," an FDA announcement said.

Artificially sweetened jam no longer need be labeled imitation

Definitions and standards of identity fixing the composition of artificially sweetened jams, jellies, and preserves have been published by FDA. Unless there are "legal objections" the standards will become effective January 29.

Under the standards, at least 55 per cent by weight of

(*Continued on next page*)

See how PLEXIGLAS *"gives" under a blow . . . without breaking!*

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PLEXIGLAS® acrylic plastic reduces the danger of food contamination and production loss due to broken glass, when it is used as glazing for windows, partitions, skylights, and for lighting shields.

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food regulations

(Continued from preceding page)

the finished food must be fruit juice or fruit. This fruit content therefore will not be less than that required for the corresponding product made with sugar.

The following safe, non-nutritive sweeteners may be used: saccharin, sodium saccharin, calcium saccharin, sodium cyclamate, potassium cyclamate, calcium cyclamate, or any combination of these.

To protect persons on sugar restrictions against indirect addition of any significant amount of sugar, the standards also limit the amount of dextrose which may be added during processing. The addition of a small amount of dextrose may be necessary where pectin is used during the jelling process, FDA said.

The newly standardized products must bear the words "artificially sweetened" prominently displayed on the label as a part of the name of the food: for example, "artificially sweetened grape jelly."

A policy statement now requiring jams and jellies containing artificial sweeteners to be labeled "imitation" will simultaneously be revoked on the effective date of the new order.

Label statements of the specified optional ingredients used in particular brands will be required: for example, "pectin and methylcellulose added" or "with added spice extract" or "(name of spice) added."

FDA STANDARDS

Enriched Rice: A petition has been filed by Uncle Ben's Inc. to amend the standard of identity for enriched rice. The proposed amendment would permit addition of butylated hydroxytoluene as an optional ingredient not to exceed .0033 by weight of the finished product.

(Continued on page 17)

For more information on product at right, circle 5903 . . . see information request blank opposite last page.

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Tempting, eye-appeal attains its most potent sales effectiveness with Red Seal Colors of unsurpassed brilliance, purity and uniformity. Let Warner-Jenkinson produce—and precisely re-produce—the exact colors to give your products the greatest possible taste-stimulating attractiveness.

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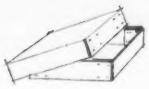
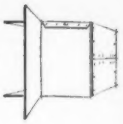
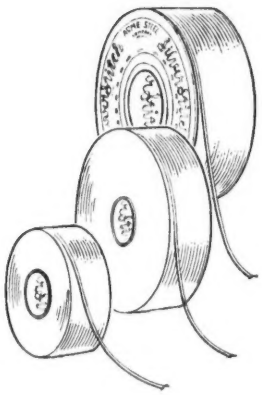


CLOSURE IDEA BULLETIN

For users of Fibreboard Boxes





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Arcuate stitching method means even greater savings...gives stitches greater column strength which means greater driving strength ...allows equally strong stitches from lighter gauge of wire...switching from .020 to .017 gauge saves 12½% on wire costs. Arcuate Folder answers questions about this method.

Wire check points...if it has electro-galvanized, rust resistant finish...close size tolerance and smoothness to protect vital machine parts...is level wound to help eliminate tangles and snags...it's excellent wire. Acme Steel Silverstitch Stitching Wire checks out on all these points.

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Your Acme Idea Man is available as a consultant on closure problems. His intensive training, backed by Acme Steel Company's 75 years experience with closure problems, can be of real time and material-saving value to you. Call him now at the nearest Acme Steel office, or write to Dept. FGW-129, Acme Steel Products Division, Acme Steel Company, Chicago 27, Ill., for information on the complete line of Acme Steel box, book and metal stitchers.

ACME STEEL WIRE STITCHING

5904 on Reader Service Slip.

(*Continued from page* 14)

According to the company, BHT, which they have been using for two years, retards rancidity.

Canned Tomatoes: FDA has published an order denying the proposal made by the Canners League of California to amend the standard to permit the addition of citric acid as an optional ingredient.

"Upon consideration of the comments presented and other relevant information," FDA said, "it is concluded that it would not promote honesty and fair dealing . . . . to amend the standard . . . ."

Fruit Preserves and Jams: General Foods has proposed an amendment to the existing standard which would make cherry liqueur and rum permitted optional ingredients. Alcohol content of the finished product would be less than two per cent by weight. The label would designate "flavored with cherry liqueur" or "flavored with rum" or "flavored with cherry liqueur and rum."

Comments have been received from the New England Society of Fruit Processors and Preservers and the Southeastern Preservers Association. Both groups oppose the standard amendment on the grounds that added the liqueur or rum could amount to consumer deception, making the product appear better than it actually is from a fruit flavor standpoint.

Concern was also expressed over the possible habit-forming effects it might have on children.

A similar proposal for canned fruits produced a controversy that resulted in public hearings and finally a separate standard of identity for the liqueur-flavored product.

READER SERVICE

For your copy of technical literature described in this section . . . use the convenient self-mailing Reader Service Slip located opposite the inside back cover.

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Morton '999' is an economical premium-grade salt entirely free from bitter calcium and magnesium compounds that can distort flavor and downgrade product. Morton '999' is always 99.9% clean, pure sodium chloride, exceptionally low in the trace metals copper and iron.

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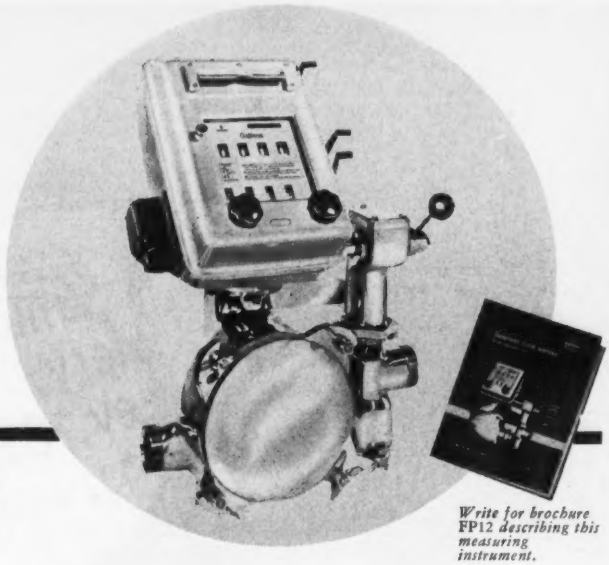

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NAME OF PRODUCT	WHAT IT IS	WHAT IT DOES	WHERE IT'S USED
STA-SOL* Lecithin Concentrate	Commercial soybean lecithin offered in various types. A mixture of phosphatides including chemical lecithin, cephalin and lipositols.	Improves fat dispersion, flow or consistency, appearance, eating qualities and shelf life of foods containing fats.	In bakery goods, candy and chocolate coatings; gravies and sauces; peanut butter; lard; other shortenings; margarine.
STALEY'S Powdered and Granular Lecithin	Uniform, free-flowing, highly refined, low-oil concentrate of naturally occurring vegetable phosphatides.	Supplies inositol, choline and many other natural substances of physiological interest for the nutritional enrichment of foods.	In food products and pharmaceuticals; for dietary supplementation.
STALEY'S Soy Flour and Grits	High-protein food ingredient binder offering decided advantages in palatability, nutrition, smoothness, prolonged shelf life.	Enhances flavor, increases nutritional values. Supplies significant amounts of vitamins, minerals, amino acids. Absorbs and retains moisture.	Extensively used in bakery goods; sausage; loaf goods; chili con carne; scrapple; dog food; dehydrated soups.
ZEST* Monosodium Glutamate	A low-cost way to bring out the natural goodness in foods without adding flavor or aroma of its own. 99+% pure.	For a fraction of a cent a pound, Zest gives your products a competitive advantage without any change in formula.	Most sausages; meat loaves; bacon; canned meats; stews; soups; poultry; gravies; frozen meat products; canned and frozen vegetables.
STALEY'S Hydrolyzed Vegetable Protein	A concentrated source of flavor made from corn protein. Being stronger and more distinctive in taste, less is needed.	Boosts natural meat flavor. Imparts appetizing golden-brown color at proved reductions in cost.	Stews; frozen meat pies; meat loaves; chili con carne; corn beef and roast beef hash; table sauces; dog food.

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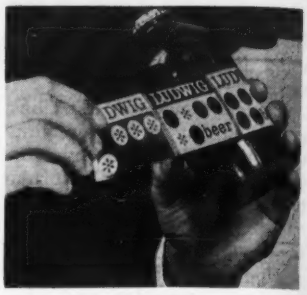


Convincing coverage . . .

. . . of a beer bottle's "equator," for real around-the-bottle merchandising impact, is reason behind development of new wrap-around aluminum foil label. It is especially designed for use with newer style beer bottles.

(Wrap-around aluminum foil label is development of Reynolds Metals Company, Richmond 18, Va.)

For more information circle 5908.

New dimension in brand identification . . .

. . . six-pack can carton combines end-panel identification with minimum packaging cost. Unique 45-degree wrap-around end panels hold cans securely while assuring brand recognition from any angle. Carton design permits use of economical paperboard stock without sacrificing strength. "Easy-open" end panel aids can removal. Special high-speed machine is available, as well as attachments for existing packaging lines.

("Contour-Pack" six-can carton is development of Packaging Corporation of America, The Ohio Boxboard Division, Rittman, Ohio.)

For more information circle 5909.

PRODUCTS AND PACKAGES

This Month's Best . . .

Pre-buttered, pre-mashed mix . . .

. . . is newest convenience-economy food for hotels, restaurants, institutions. A complete mashed-potato mix made of select Idaho Russet potatoes combined with dry whole milk and butterfat, TRIO needs only boiling water to produce mashed potatoes with a rich, buttery flavor and aroma, and with unusually long steam-table life. Economy-wise, product reduces individual three-oz portion cost to .019 cents, including labor and materials. This represents saving up to 50 per cent compared with unpeeled and pre-peeled potatoes, up to 29 per cent over flakes and granule instant potatoes. The Carnation Company, 5045 Wilshire Blvd., Los Angeles 35, Calif.

Cold heart of artichoke . . .

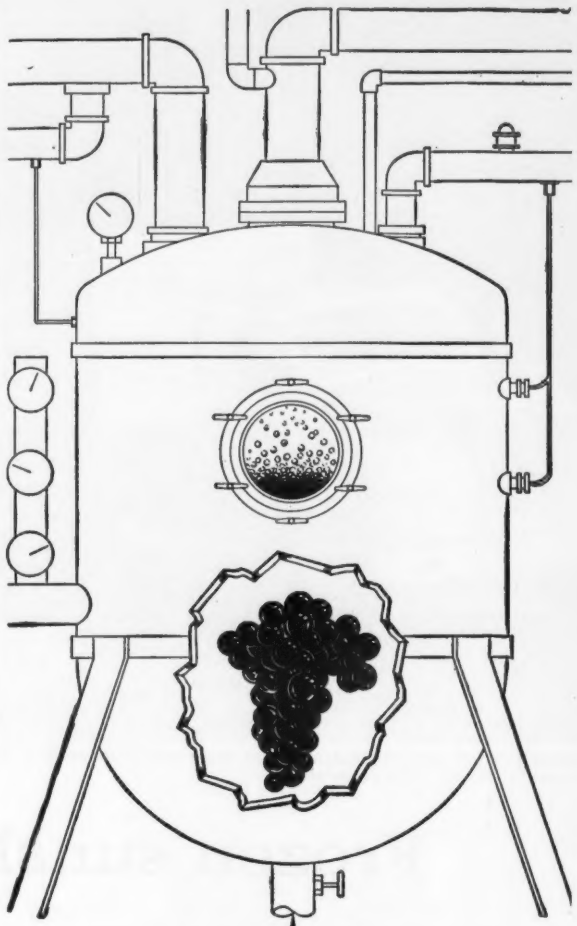
. . . packaged in halves and quarters, is latest addition to C&W line of fine frozen foods produced by California & Washington Company, San Francisco. Three-color wrapper, designed and produced by Western-Waxide Division, Crown Zellerbach Corporation, 2101 Williams St., San Leandro, Calif., contains concise recipe.

Petite 'portion-packs' . . .

. . . new, individually wrapped Miniature Clark Bars are bite-size duplicates of full-size Clark Bar — from the caramel "center of attraction," peanut butter and woven taffy to the chocolate-flavored coating. Introduced nationally, the miniature bars have glassine wrappers with heat-crimped ends, and are bulk-packed in seven-oz, clear polyethylene bags. Milprint, Inc., 4200 N. Holton St., Milwaukee 1, Wis., designed and produced wrappers and bags.

First flaked oats sow interest . . .

. . . in selected markets where the new high-protein breakfast crunchy currently is under test. Made by blended-grain process that combines oats with soy and rice flours for added nutrition, Post Oat Flakes are first cold-oat cereal not in puffed form. Reportedly "vastly superior nutritionally" to all leading oat cereals, one oz of product consumed with four oz of milk provides 25 per cent of the average adult's minimum daily requirements for 10 important vitamins and minerals.



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Better Flavors for Better Products

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For more miles per gallon, less downtime, stand-out performance . . . Mack has the unit that can reduce your operating costs. Your local Mack branch or distributor will be glad to explain in detail which Mack will best suit your requirements. Mack Trucks, Inc., Plainfield, New Jersey. In Canada: Mack Trucks of Canada, Ltd.

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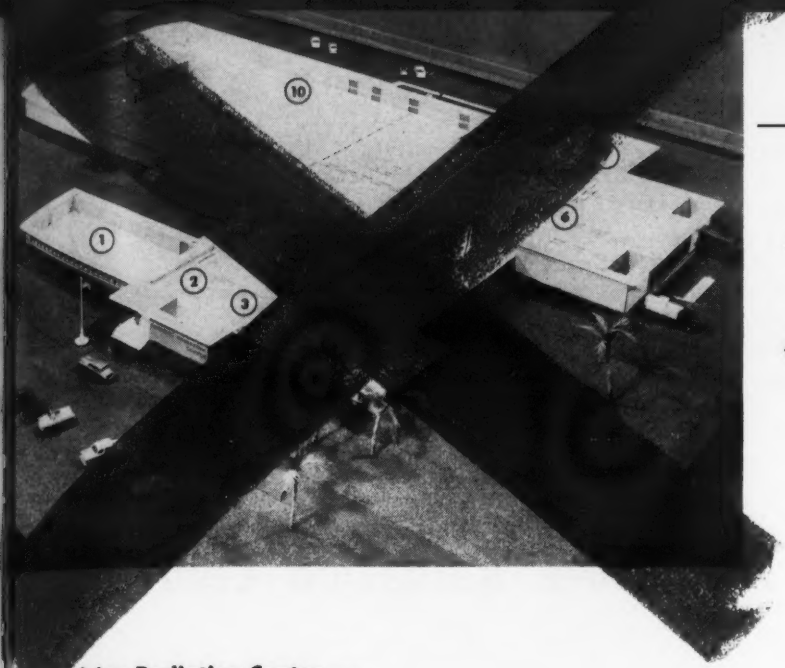
FOR MEN WHO MANAGE FOOD PROCESSING DECEMBER 1959
VOL. 20 NO. 12



WAS THIS MISTAKE NECESSARY?

Model of the Ionizing Radiation Center, carried in FOOD PROCESSING for June 1958 ("Ionizing Radiation Center Progress," pp 26, 27, 33), shows general space allocations for major functions: 1) offices, 2) lobby, 3) auditorium, 4) laboratories, 5) cobalt-60 area, 6) packing, casing, storage, shipping area, 7) linear pre-radiation food processing area, 8) production area, 9) initial pre-radiation food processing area, 10) facilities and storages

onizing Radiation Center —
Army Research and Development's

Million-Dollar Blunder

NORB LEINEN
Associate Editor

For the past several weeks, the US Army Research and Development organization has been eating crow (non-irradiated).

Reason for this strange diet — on October 22 and 23, daily newspapers across the country carried announcement of the Army's cancellation of the long-planned-for Ionizing Radiation Center at Stockton, Calif.

Along with the technical press generally, we feel a little let down — not by the US Army, whose main reason-for-being certainly is *not* food preservation, but by well-paid "experts" who, like race-track touts, offered "cold sterilization" as the horse to bet on in the Preservation Sweepstakes.

To be specific — the Army, by its own admission, committed itself to constructing and equipping a $7.5 million "pilot plant" to study commercial feasibility of irradiated foods without first having many basic answers. The Army knew when it made this commitment that these answers were prerequisite to the pilot-plant phase.

Reason given by the Army for this admitted gamble is as follows:

"When design work on the center was started in 1957, it appeared fundamental problems in radiation preservation would be solved before the facility was due to be completed. The plant planning was started at that time to make possible a quick transition from laboratory studies to pilot plant studies.

"Quick transition was deemed necessary to reduce 'lead time' — the time that elapses between the start of a development project and its final completion."

Now the Army must make a virtue of necessity by announcing termination of an ill-planned project before all of the allocated funds are spent. (As recently as mid-1958, the official attitude toward results of animal feeding studies — the direct cause of cancelling the Radiation Center — was "no problem!")

The "blue horizon" approach, which, precipitately, induced planning of a pilot plant facility before there was anything much to pilot, has, at least temporarily, brought a serious research project into disrepute.

Hence, FOOD PROCESSING's sincere regret that this important prospective food preservation technique was so unfairly and unfortunately exposed to the "big build-up" while still in its tender infancy.

It is to be hoped that the lesson learned has not been purchased too dearly in terms of dollars spent, public cynicism justified and undeserved humiliation thrust upon the many able scientists, engineers and technologists connected with basic research on radiation preservation of foods.

Civilian food irradiation program continues to make progress!

The Army's abrupt return to basic research in food irradiation — after six years of official optimism on progress being made — naturally (and unfortunately) brings into question the food irradiation program sponsored by industry.

Main point to remember is that Army emphasis has been in high-dose **sterilizing** treatment (4.8 million rad and up), leading to long-term storage of food **without** refrigeration or other preservative means.

Major civilian and industrial interest, on the other hand, is in much more easily attainable low-dose **"pasteurizing"** treatment (20,000 to 200,000 rad), used in connection with some other preservative agent or combination — such as heat, refrigeration, antibiotics, etc—with purpose merely of **extending** previous shelf life of selected food items. Progress toward this more modest goal continues to be reported as satisfactory.

For Army radiation program facts, turn page

Washington -- The Department of the Army today (Oct.22) deferred plans for construction of a U.S. Army Ionizing Radiation Center at the Sharpe General Depot, Stockton, Calif., pending further laboratory studies on the use of high dose radiation as a means of sterilizing foods.

The Army said that, although considerable progress has been made in the field of radiation sterilization, it would be premature to proceed with construction of the USAIRC until certain basic technical and economic questions about the process are answered at the laboratory level. . .

. . . So far, approximately $1.3 million has been spent on design planning and certain components for the project. Eventual cost of the finished plant has been figured at $7.5 million.

Some Facts in the "Case of the Premature Radiation Center"

What triggered cancellation of work on the Ionizing Radiation Center?

According to news conference statement of Richard S. Morse, the Army's able new civilian director of research and development, a group of laboratory animals, put on a diet of irradiated food, showed loss of fertility, a shortened life span, bleeding, blindness and heart damage.

While there was "no absolute proof" that irradiation of the food caused the injuries, Morse said that the damaging effects might have resulted from vitamin destruction by the high-energy process. However, since the tests were neither systematically programmed nor complete, Morse concluded that the entire program should be restudied, beginning with basics.

But, isn't the feeding situation mentioned above "abnormal"?

Most definitely. The feeding of an "irradiated model diet" to laboratory animals over a prolonged period of time — unsupplemented by vitamins and other nutrients that might be destroyed or altered by the radiation, might be expected to produce adverse physiological effects.

A roughly similar situation might develop should laboratory animals be fed *only* heat-processed foods, without supplementation to replace the nutrients known to be destroyed by the heat processing.

The standard was high (if not impossible), but the Army already was aware of early findings in this study when it began intensive planning in 1957 for the Ionizing Radiation Center.

Is "induced radioactivity" involved?

No. Induced radioactivity — a condition in which the substance irradiated becomes in itself radioactive as result of the radiation treatment — is *not involved* in the irradiated diets fed laboratory animals that led to cancelling the Ionizing Radiation Center. The Army reports that no radioactivity remained in the food fed the animals.

Is the Army continuing its food radiation research program?

Yes. All that is "deferred" is further expenditure on and construction of the planned $7.5 million Ionizing Radiation Center, which was to have been located near Stockton, Calif. The Army Quartermaster will continue its essentially sound food radiation research program, with major emphasis on basic research. Private and public agencies, such as universities, currently assisting under contracts with the Army, will continue these contract research studies, or may undertake new studies. Or, additional agencies may be brought into the radiation research program.

Why any need at all for an Ionizing Radiation Center?

The Center was to develop production techniques for irradiation of foods and to determine the best methods for attaining effective sterilization. It also was intended to produce sufficient quantities of foods for testing of palatability and acceptability.

When did the Army begin investigating radiation as a means of preserving food?

In 1953. The research effort has been under the direction of the Army Quartermaster Corps, with medical aspects of the program supervised by the Army Surgeon General's Office.

What has been done research-wise to date?

Laboratory studies since 1953 have been aimed primarily at determining exactly how high-dose radiation affects the physical and chemical properties of a wide variety of meats, fruits and vegetables, as well as how radiation affects their nutritional value, wholesomeness, palatability and acceptability.

In addition, studies have been carried out on suitability of various sources of radiation. Both major areas of investigation have yielded valuable results (see below).

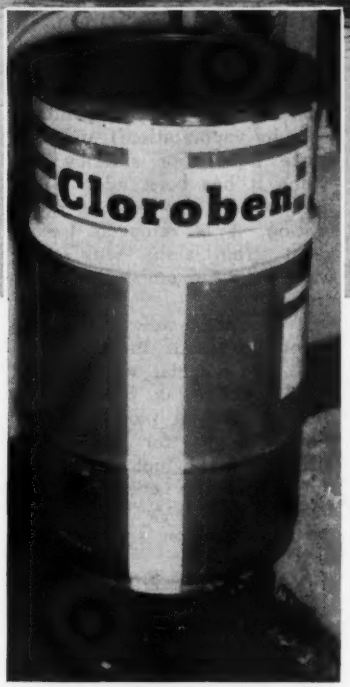
Is there any reason for a continued interest in food irradiation?

Of course. Admittedly many of the basic problems are tough — particularly odor and flavor problems in beef — but solutions are not improbable.

Seasoned scientists in the field have developed some ingenious techniques for studying the phenomena of ionizing radiation, and food scientists all over the world will still follow, despite the recent unfortunate "pilot plant" debacle, the implications of findings of scientists like Dack and Wagenaar (Cl. botulinum under irradiation), Brownell (deinfestation with irradiation), Kertesz (effects of irradiation on carbohydrates), Lea (action of radiation on living cells), Tappel (effect of radiation of constituents of meat), Bellamy (radiation effects on protein), Chipault (radiation effects on lipids), Anderson (a radiation-resistant micrococcus), Gomberg (use of irradiation to break the trichinosis cycle), Urbain (physical changes in meat due to irradiation).

There are many others — Hannan, Huber, Goldblith, Kan, Kempe, Morgan — whose investigations will continue to command attention and respect as "guideposts" in future scientific forays on the radiation preservation frontier. END

View of one of the lagoons used by dairy for disposing of waste effluent. Previous to treatment with Cloroben, lagoon was so encrusted with decomposing milk solids that snipes and muskrats were able to walk across its surface without sinking



When wash water from equipment is drained, Cloroben is added from drip tank right over drain

A new and economical way to

Solve waste-water disposal problems and odor control

- **Inhibits anaerobic sulfide producing bacteria**
- **Aids in profitable recovery of by-products from waste**

JOE VOORHEES
Associate Editor

THE results reported below seem too good to be true. But we have verified them.

Typically, the plants involved were disposing waste waters into lagoons, streams or municipal sewage systems. Typically too, the problems were the usual ones of foul odors, undesirable deposits or crusting from oily wastes or grease, and fish mortality.

Solution: The simple addition of an ounce or two of a liquid (Cloroben), per 1000 gallons of waste effluent.

Results: Odors completely disappear, scum and greasy deposits, built up over the years, vanish in a short time.

Cost of liquid: Two cents an ounce.

Controls anaerobic bacteria

Cloroben functions in two important ways. It inhibits the growth of anaerobic, sulfide-producing bacteria — the kind that produce offensive off-odors.

It does so by penetrating the cell membranes of these odor-causing bacteria. It thus allows desirable aerobic bacteria to take over and reduces the BOD (biochemical oxygen demand) naturally.

The unusual solvent qualities of Cloroben act to emulsify or liquefy grease and fat. The amount used may be as much as 50 parts per million — more or less — depending upon the amount of accumulation.

As little as two to five parts per million will stop accumulation on a preventive maintenance basis.

The three cases reported below are variations of the "typical" problem. A fourth case (to be presented next month) concerns a brewery now using Cloroben to delay undesirable changes of rancidity and putrefaction in spent grain and press liquors.

This use of Cloroben has enabled the development of by-product processing and turned a waste-disposal problem into a profitable operation.

Not only is the regular dried spent grain an improved by-product (animal feed), but a new protein sludge in the form of a wet-mash is now

(Continued on next page)

(*Continued from preceding page*)

sold to local livestock growers as a superior, high-protein food.

Diminishes after use

Cloroben is a formulation of chlorinated hydrocarbons processed with exclusive dispersing agents. (Technical orthodichlorobenzene makes up 66% of the formula.)

It is a relatively volatile product. As a result it diminishes by vaporization from the waste liquors or slurries to which it has been added. In the brewery by-product operation, it is removed from spent grain along with the water in the drum drying operation.

It is not a new chemical formulation, but its application to industrial waste disposal problems is. It is being used in certain parts of the Southwest for irrigation ditches from which livestock in open-fence areas might drink. For this purpose 66.8 parts per million of Cloroben are used.

USDA reports that no sign of toxicity was found when fed to sheep and cattle at the level of 1333 parts per million, which is about a thousand-fold greater than the concentration used in regular industrial waste treatment processes.

(Cloroben is a product of Cloroben Chemical Corporation, 115 Jacobus Ave., South Kearny, N.J.)

DAIRY

Disposes of waste water for $150 per year

A large dairy, producing over 4000 quarts of milk daily and an estimated 200,000 gallons of ice cream per year is now able to dispose of all waste-effluent for only $150 per year.

Approximately 800 to 1000 gallons of skim-milk and wash wastes from milk and ice cream operations are pumped into two sets of twin lagoons located about three quarters of a mile from the milk house and ice cream plant.

To eliminate unpleasant odors from the waste, the dairy used approximately 35,000 gallons of water containing detergents each day to pump milk and ice cream wastes into their respective lagoons. It was believed that this substantial dilution, coupled with natural evaporation, would do away with unpleasant odors.

A serious odor problem, however, soon developed. Skim milk formed a crust over both lagoons serving the milk house. In fact, the primary lagoon became so encrusted with decomposing milk solids that snipes and muskrats were able to walk across its surface without sinking.

The second, or overflow lagoon, became clogged with an almost equally solid covering of putrefied material.

At the same time, the two lagoons receiving ice cream wastes, as well as fresh fruit skins and pulps not useable in ice cream, became equally offensive reservoirs of decomposing milk fats and solids and fruit debris.

Furthermore, the 4-inch terra cotta pipes, carrying wastes to the respective lagoons, began to clog from coating of grease, requiring periodic cleaning.

Following various other attempts to control the problem, a small tank containing Cloroben was set up at head of drains in both milk house and ice cream plants (see photo).

Cloroben was dripped from the tank into wash-water that had been used to clean the plant.

At the end of three weeks, a discernible reduction began to take place in scum formation that topped lagoons. In even less time all odors from the lagoons disappeared. After six weeks all four lagoons were without trace of scum. Even more important, algae began to form in the lagoons that had previously been so high in BOD that nothing could conceivably grow in them. Today, these lagoons have developed sufficiently diversified forms of life so that they have even become the habitat of turtles and frogs.

An equally important advantage is the value of Cloroben as an emulsifier of fats. Thus, pipes through which milk-wash is fed to lagoons are no longer compacted with milk fats, eliminating the need for periodic cleaning.

Dairy uses a total of approximately a pint and a half of Cloroben per working day, divided equally between its milk house and ice cream plant.

FRUIT PROCESSOR

Controls odor from up to 4000 gallons effluent a day for $1000 per year

A fruit processor was faced with the problem of controlling undesirable odors from 300,000 to 400,000 gallons of waste effluent daily.

By using a modified air lagoon that permitted the release of compressed air through a series of sub-surfaced, perforated pipes, aeration took place in two zones through which the waste had to pass.

Despite this system, a heavy, rancid odor persisted throughout the lagoon area.

Tests indicated that dissolved sugars appearing in the waste constituted a prime cause for this rancidity since oxidation in the lagoon was continuously taking place under anaerobic conditions.

While no serious complaints had come to the attention of the company, management was determined to find a solution to the odor problem simply as a good housekeeping measure.

About a year ago Cloroben was tried, resulting in an effective solution.

A 100-gallon dosing tank of Cloroben was placed at the head of the lagoon, and its contents allowed to trickle into the intake. Within 48 hours almost all trace of odor had completely disappeared.

Because of the substantial quantity of effluent that is disposed of each day, two to six gallons of Cloroben are used daily to keep the lagoon odor-free. Dosages of Cloroben are increased during peak periods of plant activity and in accordance with weather conditions.

In the first full year during which Cloroben was used, the plant purchased eight 50-gallon drums at a total cost of approximately $1000.

VEGETABLE PACKER

Eliminates complaints on odors, fish mortality

An extremely difficult problem of waste disposal, odor and insect control plagued a processor of cucumbers, cabbages and peppers for ten years.

To handle waste from the production of pickles, sauerkraut, hot peppers, hot mixed pickles and vinegar, an elaborate waste disposal system was installed when the plant first began operation.

Effluent is discharged through a rotary distributor into a large trickling filter. From filter, effluent passes to two primary lagoons. Each lagoon receives an equal amount of effluent from filter.

Effluent then passes into a secondary lagoon for further sedimentation. From here it is pumped into a pit and then piped into a nearby river.

Despite the waste disposal system, obnoxious odors prevailed throughout the area. Furthermore, there was a marked infestation of insects and layers of deepening scum built up on all lagoons.

Eventually, public health officials insisted that the company correct conditions that were destroying fish and replacing marine vegetation with growths of fungi.

City officials recommended trying Cloroben. A 50-gallon Cloroben dosing tank was placed next to the pit in the pump house. Five gallons of Cloroben were added to 45 gallons of water and pumped

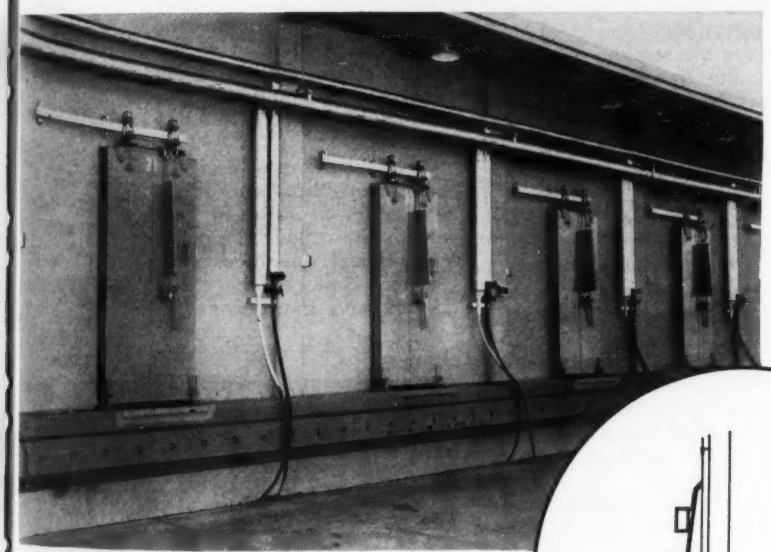
(*Continued on page* 109)

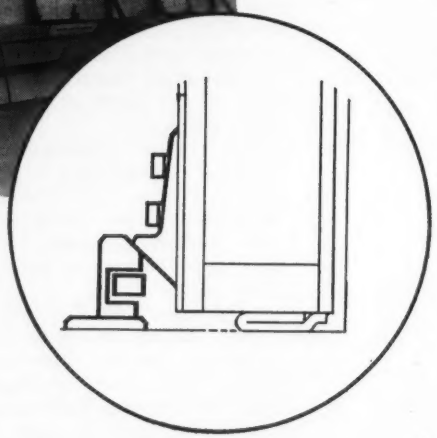
Up to 48 trucks loaded simultaneously

— each from a separate cooler door

Sliding type doors, with tight seals, are designed to provide wide enough openings for easy product handling with minimum refrigeration loss

Milk delivery trucks back up to milk cooler building where each driver loads his own truck without having to wait in line





Milk cooler building at Roberts Dairy Company, Omaha, Neb., has 48 doors, 24 on each side of the 241-foot long structure. In closing, weight of doors, combined with wedge action (shown in inset), compresses side and bottom gaskets. When closed, door seals are tightly compressed against frames. When lever-handle is pulled out, to open, door is lifted upward, riding above this wedge. At the same time, door is released from frame at top and swings very slightly outward, breaking the seals. Thus, there is no sliding friction between the door and its frame

UP TO 48 milk route delivery trucks can be loaded simultaneously and in minutes at a new milk cooler building operated by Roberts Dairy Company, Omaha, Neb. Despite heavy volume, refrigeration loss is kept to a minimum because each driver loads his truck from one of 48 separate cooler doors.

The long narrow building, 241 feet long and 34 feet wide, is adjacent to the main milk processing plant. A mechanical conveyor runs from the filler machines in the processing plant to the very end of the cooler building.

An infloor conveyor, running the full length of the cooler building, transports dairy product to the individual loading areas behind each cooler door. Conveyor, moving at rate of 29.709 feet per minute, makes possible delivery of products for assembly.

Each route man backs his truck up to a loading dock at the cooler building, unlocks and opens the cooler door to which he is assigned (see photo), and loads orders which have previously been assembled.

Cooler doors are single-leaf, horizontal, sliding type which ride on an overhead track. They are designed to provide wide enough openings for easy handling of products with minimum refrigeration loss.

Operation of doors permits easy opening (see photo with diagram inset), while providing a tight seal against refrigeration loss when closed.

Roberts Dairy officials point out that the cooler building, with its new loading methods, was planned to bring about savings in manpower and other operating costs to recover their investment within ten years.

Experience so far, however, indicates that economies realized in a reduced labor force, as well as the rapid handling of large quantities of milk products without delay due to traffic jams, may enable them to recover their investment in a shorter period of time.

(Single-leaf, horizontal, sliding type doors are manufactured by Jamison Cold Storage Door Co., Hagerstown, Maryland.)
5912 on Reader Service Slip.

(Infloor conveyor system in cooler building is manufactured by Mojonnier Bros. Co., 4601 W. Ohio St., Chicago 44, Illinois.)
5913 on Reader Service Slip.

Automation in industry has created fears for the individual worker who may be replaced in his job by a machine. In a constructive step to help overcome these fears, Armour and Company is leading the way with

A NEW APPROACH TO MEN AND MACHINES

JOE VOORHEES, Associate Editor

ARMOUR'S AUTOMATION PLAN

In a radical departure from management's long-standing position that automation creates more jobs than it eliminates, Armour and Company has taken a definite step in working with the unions to solve the labor problems arising from automation.

Recognizing the fact that the individual who may be replaced in his job by a machine has an understandable fear of the situation, Armour's new contract with the meat packing unions contains an automation plan.

The plan is particularly significant because of union recognition, with the company, that modernization is vital to Armour's ability to compete and grow, thus providing a reasonable capital and the assurance of continued employment.

Briefly, the automation plan provides for a fund to be set up by Armour, which will be used for the purpose of studying the problems resulting from modernization programs and making recommendations for their solution.

This includes training employees to perform new and changed jobs, and promoting employment opportunities within the company for those affected.

Armour will establish the fund by contributing one cent for each hundredweight of total tonnage shipped from meat packing plants covered by the agreement. Contributions will terminate upon reaching the total sum of $500,000.

Funds will be administered by a committee of nine representatives composed of four men from management and two from each of the two unions representing Armour employees. The ninth member of the committee will be an impartial chairman, selected by mutual agreement of parties.

This committee will consider a program to train qualified employees in the knowledge and skill required to perform new and changed jobs so that the present employees may be utilized for this purpose to the greatest extent possible.

They will also consider the possibility of transferring employees to plants covered by the agreement, where job opportunities remain or are increasing, as well as any other methods that might be employed to promote continued employment opportunities for those affected.

As the meat industry makes a big effort to overcome a half-century of obsolescence in a few short years, it is making tremendous strides in mechanization and automation.

Beef operations, which have always required considerable manual labor, are now being modernized. After rendering the animal unconscious, cattle in many plants are now slaughtered on overhead rail conveyors with the utilization of mechanical knives and mechanical hide pullers.

One of the most modern beef operation is at the new Supreme Beef Co. plant in Lubbock, Texas, an Armour affiliate. Here, an automatic overhead rail conveyor carries the animal from the time it enters the slaughtering line right into the chilling room.

Workmen, who dress, skin and split the carcass, stand on platforms which may be automatically raised and lowered to give them proper working leverage. Work is brought to them in precision, ready for specific operations which each man performs.

Hides, viscera and fats are carried off automatically to side processing rooms. From the chilling room, the carcass is swung onto a conveyor belt and delivered directly to the door of the truck or boxcar for shipment.

This entire operation at Lubbock requires only 39 production men — a considerable reduction in the number of men needed to process an equivalent amount of beef in older plants.

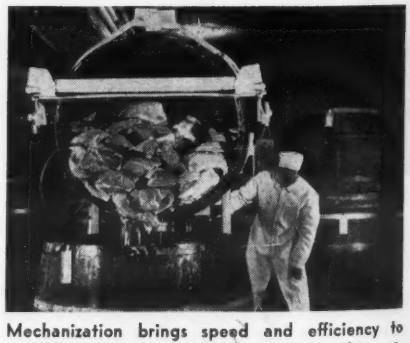
At Armour's St. Paul plant, a new bacon assembly line (built by Emhart Manufacturing Co.) slices, packages and weighs bacon. System automatically records over or under weights for each one-pound package. Machine has enabled each operator to double poundage output.

Other processing innovations to modernize the meat industry include curing and smoking hams in about 48 hours from speedy treating by automatic hypodermic needles and hot smoke streams — providing products of greater uniformity than previously produced.

Formulas for correct proportioning of various types of meats, seasonings, etc. that go into sausages can now be computed on electronic machines in a matter of minutes — an operation which previously required hours.

These and many other means of mechanization and automation are aimed at expanding chronically thin profit margins which packers have suffered for innumerable years.

Probably the most dramatic example of the meat industry's desire to switch to new ways is the exodus of slaughtering house operations from Chicago. None of the major packers have slaughtering op-



Mechanization brings speed and efficiency to handling of heavy, bulky materials. This vat-dumper easily lifts and tilts vat of meat weighing a ton, and transfers it to another vat as part of the curing process. Originally, meat had to be transferred by hand

erations in Chicago any longer.

Wilson abandoned its slaughterhouse in 1955. And Swift and Armour followed suit last summer. In addition, Armour simultaneously ended its slaughtering operations at four other sites. Smaller, newer plants, closer to the hog and cattle country are taking over the slaughtering job for the packers.

But, as the industry updates its methods, many laborers and office workers are being dropped from the payrolls.

And greater job security is playing a big part in negotiating contracts with meat and packing unions.

Management, however, is not unaware that mechanization and new methods to promote operating and distributing efficiencies affect the number of employees required and the manner in which they perform.

Leading the field is Armour and Company with their automation plan (see adjoining columns) to help solve the labor problems arising out of automation. END

How labor views automation

Automation from labor's point of view is subject of 28-page pamphlet recently published by the AFL-CIO.

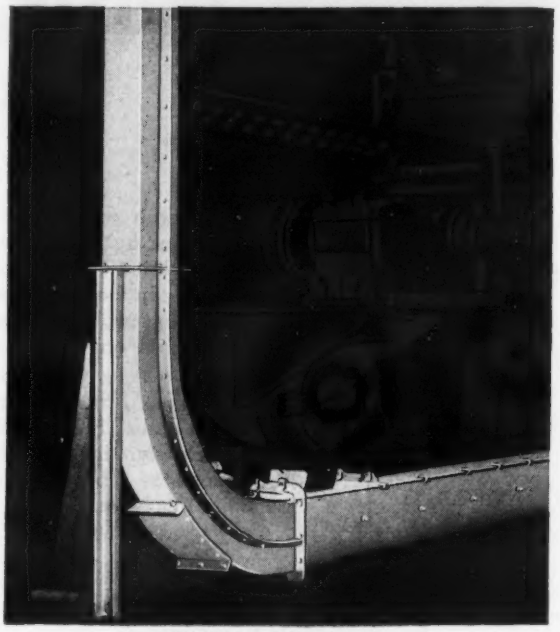
Fully illustrated pamphlet details labor's position on the spreading introduction of automatic and semi-automatic systems which are creating a host of problems for workers, businesses and entire communities.

George Meany, President, AFL-CIO, has authored the foreword summarizing the union's position. Several charts graphically illustrate statistics on decline in wage and salaried jobs, blue collar jobs versus white collar jobs and the rapid growth of labor forces.

("Labor Looks at Automation", 28-page pamphlet, may be obtained from American Federation of Labor and Congress of Industrial Organization, 815 16th St., N.W., Washington 6, D.C.)

5914 on Reader Service Slip.

STEPHENS-ADAMSON



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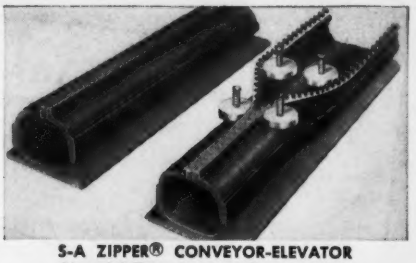

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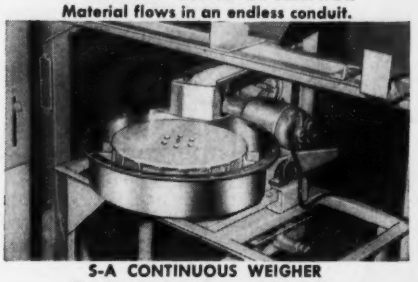
Material flows in an endless conduit.



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Continuous accurate weighing for gravimetric feeding operations.

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When you invest in bulk handling equipment, the true cost is the price divided by years of satisfactory, efficient service. Unless you are presently one of the thousands of users of STEPHENS-ADAMSON Bulk Handling Systems you haven't discovered the most profitable answer to the above formula. STEPHENS-ADAMSON engineers and builds several types of conveyors for the chemical industry, each providing distinct advantages over the other for certain bulk handling situations. Thus, STEPHENS-ADAMSON recommendations are always based — not on a desire to sell a particular type of conveyor — but the most efficient type of system for the requirements involved. To acquaint you with the versatility of STEPHENS-ADAMSON engineering, we are preparing a special book on Food Handling. Write for your copy.

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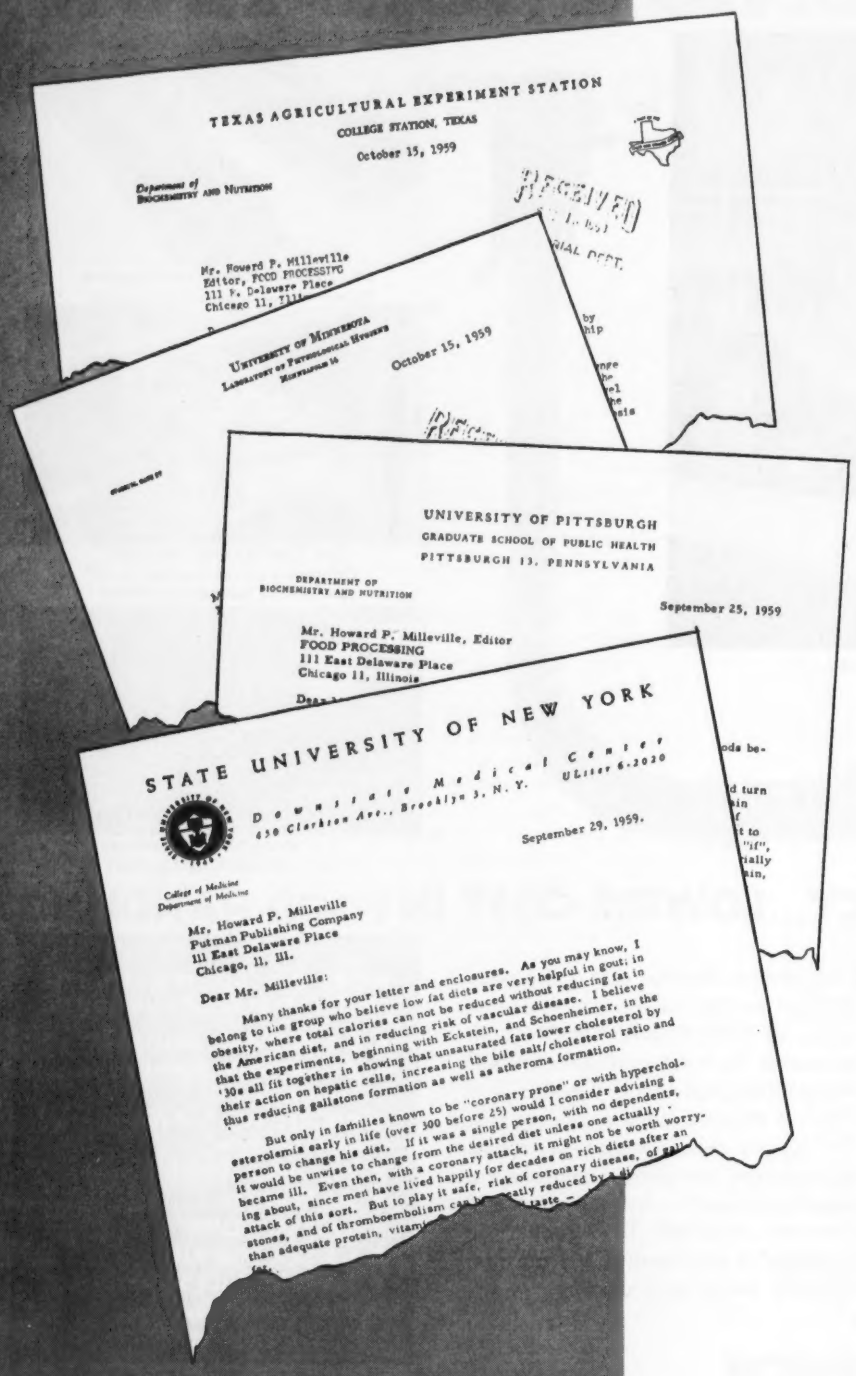
CRISIS FOR FATS



TEXAS AGRICULTURAL EXPERIMENT STATION
COLLEGE STATION, TEXAS
October 15, 1959

Department of Biochemistry and Nutrition

Mr. Howard P. Milleville
Editor, FOOD PROCESSING
111 E. Delaware Place
Chicago 11, Ill.

RECEIVED

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DEPARTMENT OF BIOCHEMISTRY AND NUTRITION

September 25, 1959

Mr. Howard P. Milleville, Editor
FOOD PROCESSING
111 East Delaware Place
Chicago 11, Illinois

STATE UNIVERSITY OF NEW YORK
Downstate Medical Center
450 Clarkson Ave., Brooklyn 3, N. Y. ULster 6-2020

September 29, 1959.

College of Medicine
Department of Medicine

Mr. Howard P. Milleville
Putman Publishing Company
111 East Delaware Place
Chicago, Ill, Ill.

Dear Mr. Milleville:

Many thanks for your letter and enclosures. As you may know, I belong to the group who believe low fat diets are very helpful in gout; in obesity, where total calories can not be reduced without reducing fat in the American diet, and in reducing risk of vascular disease. I believe that the experiments, beginning with Eckstein, and Schoenheimer, in the '30s all fit together in showing that unsaturated fats lower cholesterol by their action on hepatic cells, increasing the bile salt/cholesterol ratio and thus reducing gallstone formation as well as atheroma formation.

But only in families known to be "coronary prone" or with hypercholesterolemia early in life (over 300 before 25) would I consider advising a person to change his diet. If it was a single person, with no dependents, it would be unwise to change from the desired diet unless one actually became ill. Even then, with a coronary attack, it might not be worth worrying about, since men have lived happily for decades on rich diets after an attack of this sort. But to play it safe, risk of coronary disease, of gall stones, and of thromboembolism can be greatly reduced by a diet of less than adequate protein, vitamin

fat.

This month we continue presenting the views of various authorities on the relationship of fats in the diet to heart disease. In this way, the reader can better judge for himself the merits of the opposing viewpoints which were summarized in our article in the October issue.

In that article, we reported on some studies of Dr. Hansen, at the University of Texas, under the subtitle "Filled milk best for infants." Unfortunately, this subtitle has erroneous implications as discussed in more detail on page 39 of this issue.

Howard P. Milleville
Editor

RAYMOND REISER, Ph.D.

Dept. of Biochemistry and Nutrition
Texas Agricultural Experiment Station

I believe that the continuing studies on the role fats in the diet on the genesis of atherosclerosis are emphasizing more and more strongly the necessity of a balanced diet, as described in my "Letter to the Editor" published in the Journal of the American Oil Chemists' Society of February, 1957 (also see FOOD PROCESSING, March, 1957).

Although it is probably true, that for some unknown reason, the polyunsaturated fatty acids of the diet are less cholesterogenic than saturated, this should not be interpreted to mean that they can prevent a high level of blood cholesterol or its deposition in arteries when simply added to a diet.

If a diet is high in cholesterol and other fat, the addition of polyunsaturated fat to the diet may actually add to the difficulties.

In work in our laboratory, which we have recently completed, we found that cottonseed oil at a 20% level in the diet of swine produced a much lower level of cholesterol synthesis and deposition than corresponding amounts of saturated fat. Nevertheless, when a high level of cholesterol was added to the diets, those animals receiving the cottonseed oil actually developed a higher degree of atherosclerosis than those receiving saturated fat.

The reasons for this appeared to be that much more dietary cholesterol was absorbed with the unsaturated fat than with the saturated. The higher level absorbed more than made up for the lower level of synthesis.

I believe that this effect of unsaturated acid on cholesterol absorption and its additive effect with respect to total calories and the inbalance in the fat; carbohydrate; protein ratio must be very strongly pointed out lest people lean too heavily upon unsaturated fatty acids in their diet, or as a medicine, as a preventive or cure of atherosclerosis.

a reappraisal by the experts Part II

ROBERT E. OLSON, M.D.

Professor, Biochemistry and Nutrition
University of Pittsburgh

In your article you state "If corn and cottonseed oils should turn out to be effective in materially lowering serum cholesterol under certain conditions and hence presumably effective in treatment and prevention of various heart and vascular diseases, are they then medicines and subject to FDA control?"

In my opinion there is no longer any doubt about the first "if", i.e., "If corn and cottonseed oils should turn out to be effective in materially lowering serum cholesterol." This has been established time and time again, if they are, as Stare and Lown indicate, substituted for saturated fat in the diet at the same level of total fat intake.

The "if" should be applied to the second part of your sentence. Rather than using "presumably", the "if" should be applied to the question of whether such a lowering will, indeed, be effective in treatment and prevention of various heart and vascular diseases.

This is the only question which remains to be answered, and in my opinion can only be answered by the study of a large population of individuals subsisting on modified diets of the type indicated above in comparison with those that subsist on "a standard American regimen."

One other comment: The use of the term "essential" to apply to those fatty acids which lower serum cholesterol in man is an inappropriate use of the word. Please see my review of the subject of Nutrition in the Annual Review of Biochemistry, 28, 467, 1959, and paper by R. T. Holman in Nutrition Reviews, 16, 33, 1958. There are many poly-unsaturated fatty acids, including linolenic, which are not "essential"*, but which still lower serum cholesterol in man.

WILLIAM DOCK, M.D.

Department of Medicine, State University of New York

As you may know, I belong to the group who believe low fat diets are very helpful in gout; in obesity, where total calories cannot be reduced without reducing fat in the American diet; and in reducing risk of vascular disease.

I believe that the experiments, beginning with Eckstein, and Schoenheimer, in the '30s all fit together in showing that unsaturated fats lower cholesterol by their action on hepatic cells, increasing the bile salt/cholesterol ratio and thus reducing gallstone formation as well as atheroma formation.

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Even then, with a coronary attack, it might not be worth worrying about, since men have lived happily for decades on rich diets after an attack of this sort. But to play it safe, risk of coronary disease, of gallstones, and of thromboembolism can be greatly reduced by a diet with more than adequate protein, vitamins, calories and taste — but very low in animal fat.

ANCEL KEYS, Ph.D.

Professor and Director Physiological Hygiene
University of Minnesota

The article, "Crisis for Fats", is a fair reflection of the controversy about the desirability of altering the current high fat diet pattern in the United States. Most of the apparent differences of opinion actually have to do with practical application of facts about which there is no longer much argument. It is significant that few experts will contest the following points:

1) The concentration of cholesterol, especially in the beta lipoprotein fraction, in human blood serum is powerfully influenced by the amount and kind of fatty acids in the diet, the common saturated fatty acids tending to produce increased serum cholesterol level while poly-unsaturated fatty acids have a somewhat weaker opposing effect. Oleic acid has little or no effect. Individuals differ in their intrinsic characteristic cholesterol levels but, in general, the higher these levels, the more susceptible they are to dietary alteration.

2) Persons with clinically recognizable complications of atherosclerosis tend to have higher serum cholesterol values than their clinically healthy counterparts and patients suffering from diseases associated with elevated cholesterol levels (diebetes mellitus, myxedema, nephrosis, familial hypercholesterolemia) also tend to be unduly prone to atherosclerosis and its complications.

3) Prospective studies on men clinically healthy at the time of first examination show that elevated serum cholesterol levels are associated with increased risk of developing coronary heart disease even in the absence of obesity and elevated blood pressures.

4) Population habitually subsisting on relatively low-fat diets exhibit low blood cholesterol values and a reduced frequency of severe coronary atherosclerosis, myocardial infarction and coronary heart disease. The same is apparently true of populations whose diets, though fairly high in total fats, are low in saturated fatty acids (e.g. the olive oil eating populations in Greece, Dalmatia, parts of Italy). All of these groups are in contrast with populations whose diets are high in saturated fatty acids (i.e. 15 per cent or more of total calories from these fatty acids), whose blood cholesterol values are much higher and in which atherosclerosis and its complications increasingly dominate the picture of health and disease in middle-age and older.

5) Obesity is a health hazard, especially for the heart and blood vessels. Fats provide by far the most concentrated food source of calories and restriction of fatty foods in the diet is a simple and obvious way to reduce the

(*Continued on next page*)

*Editor's note: Our use of "essential" in this connection (see table, page 38, October, 1959 FOOD PROCESSING) is admittedly inexact. The effectiveness of unsaturated fats in lowering serum lipid levels is due merely to the total content of polyunsaturated fatty acids — those containing more than one double bond in their structural formula — and not to specific, so-called fatty acids.

calorie intake and so to combat obesity.

6) There is no evidence and no theoretical basis, for suggesting that any harmful or deleterious effects may result in adults from consuming diets, otherwise adequate, in which total fats provide as little as 20 per cent of the total calories, or in which saturated fatty acids provide as little as 5 per cent of the total calories. Current American diets are about twice as concentrated as this in total fat calories and three times as high in saturated fat calories.

7) Few if any responsible nutritionists can find fault with dietary alterations that involve substitution of lean for fat meat, increased consumption of fish, of fruits and vegetables, increased consumption of non-fat milk solids at the expense of saturated fatty acids, substitution of natural seed oils for hydrogenated products made from those oils, and moderation in total calorie intake. Quite apart from any presumptive effects on blood cholesterol and atherogenesis, most nutritionists will approve of such adjustments. But these dietary alterations will also tend to reduce the cholesterol and related lipids in the blood of man, as incontrovertibly shown in numerous controlled experiments on man.

8) Few if any responsible internists or cardiologists will be as pleased with serum cholesterol levels of the order of 300 mg. per cent or more, in themselves or in their patients, as with lower values, say 250 or, better, 200 mg. per cent. No one can say what, if any, measure of protection against atherosclerosis and its consequences would result from a substantial reduction from an elevated serum cholesterol level in a middle-aged person. But are there any informed physicians who would not welcome such a reduction, other things being equal?

So the issues have to do with the application of the above. Many of us, including myself, deplore over-zealous commercial exploitation of vegetable oils, special margarines and fancy packages of

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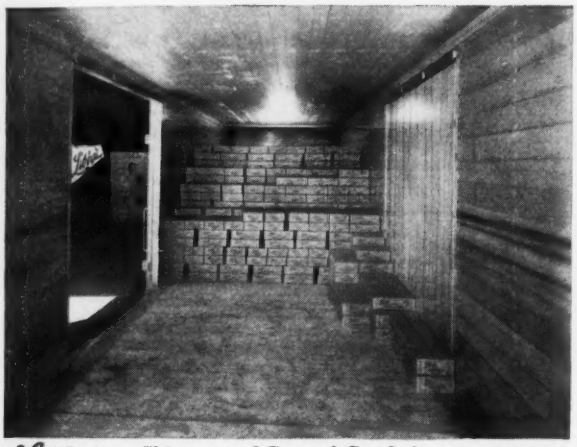

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Fats crisis

"anti-cholesterol" preparations. Nor would I advocate a national scare-campaign against fats in general or against saturated fats in particular. But I do believe the following:

1) The interested public as well as the medical profession should be kept informed as to what is known and what is the evidence about relationships in man, between the diet, the blood cholesterol and related lipids, atherogenesis, and coronary heart disease.

2) Physicians, their patients, and the interested public who so desire should be aided in devising and preparing suitable diets reduced in saturated fatty acids. There is little justification in dismissing these interests with sage remarks about "fad" diets.

3) Misleading and biased propaganda on these questions from conflicting commercial interests should be restrained, whether this be from the meat, dairy, vegetable oil, or pharmaceutical industries. I believe too that pundits of the "you can't prove it" school should consider the actual history of medical and public health progress and reflect on the comparative virtue of harmless measures that *may* have truly valuable results. Excessively negative attitudes are poor substitutes for critical judgment.

4) Finally, we obviously need more and better research but realistic appraisals of probabilities in applied medical science can and generally must be made before we achieve full understanding of all mechanisms involved in etiology and pathogenesis. ◀

FOCUS ON TECHNICAL PROBLEMS FOR 1960

January FOOD PROCESSING will feature comments from industry's leading research directors to provide insight into technical developments undergoing extensive investigation now.

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New machine that cold-folds and locks unscored die-cut plastic blanks at 40-100 per min opens era of

low-cost rigid transparent packages

NORB LEINEN
Associate Editor

The first automatic machine to cold-fold and lock unscored die-cut plastic blanks into trays opens up exciting merchandising possibilities for tomatoes, dehydrated fruits, meats, cookies, candy.

For such products, the clarity and rigidity of the oriented styrene sheeting combines the dual advantages of high visibility for point-of-sale impact with needed product protection.

Previously, processors have been unable to capitalize on the obvious advantages of transparent packaging because of slowness and expense of heating and forming plastic sheets. When the more economical folding-type plastic sheeting was substituted, product protection was inadequate.

Plastic blanks fed into magazine (upper arrow) emerge as formed and locked trays (lower arrows) which then are conveyed to filling operation at left

Unique teamwork

Designated "Plasti-Lok" the development is result of more than three yr of cooperative effort involving a resin producer, a material supplier, a machine developer and a machine manufacturer — a creative relationship believed to be the first of its kind in the packaging industry.

Basis of the new system is a unique "cold-folding" principle, which eliminates need to heat and form plastic sheets — a method now in some current use.

Principle essentially involves confining the plastic material, to prevent cracking or "crazing" while it is being folded, and permitting it to resume its stability after package is locked.

The locking feature, incorporated in the plastic blanks, capitalizes on the inherent properties of oriented styrene sheeting to form a closure which is virtually unopenable — thus overcoming previous objections to folding-type plastic cartons.

System requires oriented styrene sheets, as none of the other currently available plastic sheets have the required properties for cold-forming and locking.

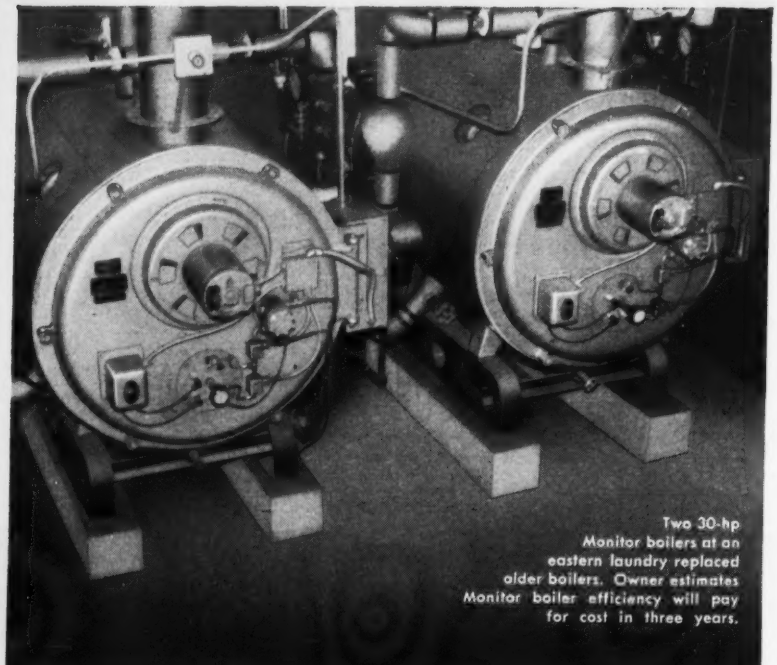
This material reportedly is the least expensive semi-rigid type of transparent sheet available — with outstanding clarity, toughness and dimensional stability. It is easily printed by standard commercial processes, therefore is considered ideal for high-speed fabrication by means of the new Plasti-Lok process.

Basis for automatic system

Speed of the Plasti-Lok machine — 40 to 100 plastic packages per min (depending upon package size and dimensions) — is comparable to speeds and efficiencies of current paperboard tray-forming machines.

In some cases, the package-forming machine will be connected with automatic filling

(Continued on next page)



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low-cost packaging

(*Continued from preceding page*)

and wrapping equipment to make for the first high-speed, fully automatic rigid plastic packaging systems.

Nine major carton manufacturing plants, located throughout the country, have been licensed to produce and supply Plasti-Lok plastic blanks. For names and addresses write: Monsanto Chemical Company, Plastics Division, Springfield, Mass.

(Plasti-Lok machine, which produces rigid transparent trays according to "cold-folding" principle developed by Charles E. Palmer of Charles E. Palmer and Associates, Somers, Conn., is offered in several models for purchase or lease by R. A. Jones and Company, Inc., P.O. Box 485-T, Cincinnati, Ohio.)
5919 on Reader Service Slip.

("Polyflex" oriented styrene sheeting is manufactured from resins supplied by Monsanto Chemical Company, Plastics Division, Springfield, Mass., by Plax Corporation, P.O. Box 1019, Hartford, Conn.)
5920 on Reader Service Slip.

Can you judge economic trends correctly?

Timing of a boom or upturn in the economy may be critical in business management. To help executives, business indicators can be valuable yardsticks.

Book outlining intelligent use of these indicators is based on fall 1958 Finance Conference of American Management Association.

It is divided into three parts: evaluating and interpreting the indicators; using the indicators for industrial forecasting; and what the indicators show—current trends and prospects.

("Evaluating & Using Business Indicators," AMA Management Report No. 25, 159 pp, is available for $3.75/AMA members: $2.50, from the American Management Association, Inc., 1515 Broadway, New York 36, N.Y.)

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Food Improvement Directed away from Standardized Foods

An industry viewpoint of FDA identity standards

Dr. F. N. PETERS*
The Quaker Oats Company

Dr. F. N. Peters

The fullest use of new food additives which have been declared safe for use is seriously restricted because of existing standards of identity.

This is one of the conclusions of a survey we made of an admittedly small but important group of food processors.

Our number of correspondents was only around 75 but they represent companies whose annual sales total several billions of dollars, whose combined research expenditures run into tens of millions per year, and who employ over 2000 research personnel.

Although FDA identity standards can be modified and the Hale amendment adopted in 1954 makes modification relatively simple in some cases, the survey showed most manufacturers were reluctant to request changes for anything but major developments.

Letter after letter contained variations of the statement, "Since the principal remaining objective of standards is to prevent economic fraud, it is unnecessary for the Administrator to limit the optional or secondary ingredients to those specifically listed in an identity standard. All that is now needed is to establish minimum amounts of expensive ingredients and maximum amounts of the inexpensive ones."

The comments we received can be summarized as follows:

Whenever standards are needed to prevent dilution of integrity of foods, industry will support them.

Whenever the promotion of honesty and fair dealing in the interest of consumers needs a food standard for its fruition, industry will support that also. The crucial question revolves around the definition of "need".

Because of the 1958 amendment, the question of safety need not be considered as a basis for establishing standards; hence there remains only the need to prevent debasement or dilution of integrity. This can be done by placing floors under the expensive basic ingredients and ceilings over the use of inexpensive diluents.

In products like bread there are so many possible additives that at least ninety were included in the bread standards under the classification of optional ingredients. Probably many more could be included, but several respondents said the situation was already so confusing there was no point in adding more additives.

Others commented that so many optional ingredients were included in the definition of white bread, bakers had given up trying to put out improved specialty breads. For example, it was stated that even though buttermilk was used as the sole moistening agent in a formula the resulting product could not be called buttermilk bread, because it came under the classification of white bread.

Others complained that the housewife was being deprived of better breads than she would have, were standards placed on a different basis.

As more and more additives become available the situation becomes increasingly confused.

Research discouraged

The area where there was most complete agreement was the effect of standards upon research. There can be no question but that promulgation of standards has discouraged research in those areas.

A few companies reported a rule exists — "No research money will be spent on any standardized item" . . . many companies reported research work was discouraged although not prevented on standardized foods.

Another very large organization — the largest in its field — reported that executive committee approval had to be obtained before any research was permitted on a standardized food and then it had to be shown that the probable improvements would be so profitable it would be worth the cost of trying to change the standards.

Typical quotations on this subject follow. Each comes from a different industry group.

"The existence of Federal

(*Continued on next page*)

* This article by Dr. Peters is based on a paper which is published in full in the October issue of **Food Technology**. It was first presented at the Institute of Food Technologists Symposium on FDA Food Standards held in Philadelphia last May.

Industry viewpoint of identity standards

(*Continued from preceding page*)

Definitions and Standards of Identity for certain foods has had a very pronounced impact upon research in our part of the food industry and has at times made it seem impossible for us to plan a successful or promising research program."

"One of the worst things about standards of identity is that changes always have to be major ones before it is worthwhile doing anything about changing the standard and, therefore, until major changes come along all minor improvements are withheld."

"Standards of Identity have certainly held up technological progress in the improvement of many of our food products."

FDA policies are frustrating

This writer believes that the food processors represented in this survey, as well as Food and Drug officials, feel a deep obligation to protect the public welfare, but "protection" is defined differently by each group.

The food people believe in new development and progress, in making available to the public all improvements possible from advances in a rapidly expanding technology. They believe they are competent judges of what is good for the public, but they feel their opinions and suggestions are entirely bypassed when Food and Drug policies are established.

This leads to frustration and resentment, particularly as they feel the regulatory agency is more concerned with a negative approach and is occupied with a suspicion that any changes proposed by industry are bad unless conclusive proof to the contrary is forthcoming.

Although the Administrator has often announced an open-door policy many processors still feel their suggestions are not considered impartially and their criticisms arouse resentment. It cannot be doubted that this attitude is unfortunate and efforts should be made to create a freer and more sympathetic consideration of new ideas regardless of their origin.

Mention has been made that the reduction in the numbers of cases of dilution of integrity is considered beneficial to the consumer. Some believe in addition that the mere existence of standards has given consumers increased confidence in the quality and safety of foods. Some of these views were as follows:

"Without doubt, Definitions and Standards of Identity have been of great help to the Food and Drug Administration in carrying out its duties of law enforcement. From this standpoint alone . . . consumers have benefited at least indirectly because the job of law enforcement has been made easier and more clear-cut."

"I believe that our Company and many others have been helped by these standards, at least by some of them, in that their existence has made for fairer competition and greater confidence of the public in our industry's products."

"We feel there is advantage to the public and to industry in food standards."

"Standards tend not only to upgrade the products of the bucketshop operator, which is good, but to stabilize if not downgrade the products of the better and more progressive manufacturer, which is bad . . . Some means must be found to permit manufacturers to make a better product than the standards provide, if they wish to do so."

"I think all of us will agree that the experience of the food industry in the area of non-standardized foods clearly shows the downgrading effects of unbridled price competition on basic quality of such foods, with a resulting loss of consumer respect for the class of foods involved and a deterioration of the industry. This can happen particularly where there is a lack of statesmanship on the part of seasoned food manufacturers who should know better, who in the face of such price competition in the form of low quality merchandise allow themselves to be led down the primrose path and likewise degrade their own standard products so as to be price competitive. There is little question but that the Definitions and Standards for Foods help in some measure to prevent this sequence of events."

A few persons declined to comment because they believe any public criticism of standards will be interpreted by consumer groups as evidence that the food industry is indifferent or neglectful of its public responsibilities.

Some feel it unwise to criticize any actions of the Food and Drug Administration for fear of arousing the displeasure of that agency.

Food improvement shackled

The general philosophy of the industry as gleaned from all comments appears to be as follows:

1. Ethical food manufacturers are sensitive and responsive to public opinion. They feel an obligation to produce foods free from impure and unwholesome products and to make foods which they believe the customer wants.
2. They believe they are better informed of consumer desires and needs than any other group and, assuming safety of ingredients has been achieved, the housewife should be the arbiter as to what products should be manufactured.
3. They believe in informative labeling and freedom to make improvements in a wide variety of products.
4. They believe recipe standards are a disservice to consumers because they delay or prevent improvement, place a premium on mediocrity and deprive the consumer of freedom of choice. END

New basis advanced for identity standards

Last month, in publishing the new basis we are advocating for FDA identity standards, the printer inadvertently pied a line of type as we went to press, confusing the meaning. The corrected statement, along with two paragraphs that follow, is reproduced below:

In previous articles published in Food Processing, under the general heading of "Unshackle Food Improvements", the argument was advanced that when separate legislation was established controlling the safety of food additives, the only ingredients which should be fixed in an identity standard should be those essential to (1) identity, and (2) economic integrity.

To these basic requirements we now add one more: (3) elimination of confusion in the mind of consumers.

This added requirement not only brings our argument in line with the basic points of the 1938 Act previously discussed in this article, but also brings it in line with the Supreme Court decision, Quaker Oats Farina Case, to which the FDA always falls back to support its recipe standards. END

conventions and exhibits

Dec. 26-*Jan.* 3. Dairy and Food Exposition, Coliseum, New York, N.Y.

Jan. 18-23. National Canners Assn., annual meeting (including concurrent Canning Machinery & Supplies Assn. exhibit of canning and freezing machinery, supplies and services), Hotel Americana, Miami Beach, Fla.

Jan. 25-27. National Dairy Council, 45th annual meeting, Hotel La Salle, Chicago, Illinois.

Jan. 25-28. Plant Maintenance & Engineering Show, and concurrent (Jan. 25-27) Conference, Convention Hall, Philadelphia, Pa.

Feb. 8-10. Fifth Military-Industry Packaging and Materials Handling Symposium, Sheraton Park Hotel, Washington, D.C.

Feb. 12-14. Institute of American Poultry Industries, fact-finding conference and exposition, Municipal Auditorium, Kansas City, Mo.

Feb. 23-24. Eighth annual National Dairy Engineering Conference, Kellogg Center, Michigan State University, East Lansing, Mich.

Mar. 6-9. National Assn. of Frozen Food Packers, 19th annual exposition and annual meeting, Conrad Hilton Hotel, Chicago, Ill.

Mar. 21-24. Institution Food and Supply Show, New York Trade Show Bldg., New York, N.Y.

Apr. 4-7. American Management Assn., 29th National Packaging Exposition & Conference, Convention Hall, Atlantic City, N.J.

Apr. 19-21. Research and Development Associates, 14th annual meeting, Congress Hotel, Chicago.

April 27-30. Western Air-Conditioning Industries Assn., 3rd Western air-conditioning, heating, ventilating and refrigeration exhibit and conference, Shrine Exposition Hall, Los Angeles, California.

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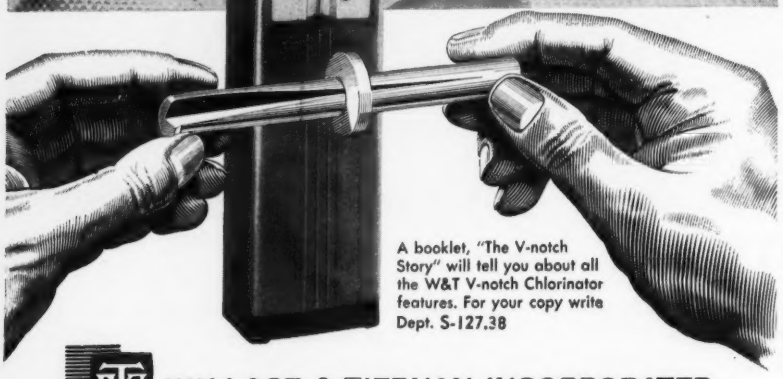

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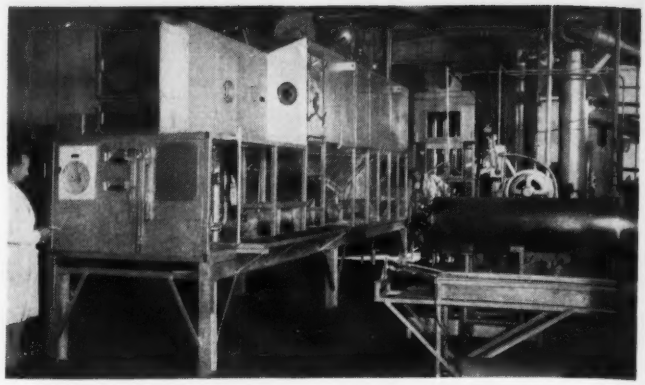

Sanitary design and construction is feature of pilot plant spray dryer, evaporator and preheaters

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Full experimental program based on horizontal air-suspension dryer

A research and development aid to spray-drying is the newly completed, sanitary-design, pilot plant of The Henszey Company, Inc.

Its objective is to test the application of the horizontal air-suspension method of spray-drying to all types of materials: — not only a wide variety of straight dairy products but brewers yeast, special instant whipping agents, fruit and vegetable juices and purees, and other concentrates.

Evaporation capacity of dryer is about 200 lbs of water per hour. This size of pilot plant is the minimum for producing a spray-dried product matching that produced on large production units. Minimum amount for an hour's run is about 500 lbs of feed at 45 per cent solids.

Part of the system is an evaporator matching the capacity of the spray dryer. It is designed for close temperature control of the product as well as the heating medium. In addition, tubular heaters and direct steam injection preheaters are available for special heat treatments.

Pilot plant is designed for close control of time and temperature relationships.

Dryer has three different types of collectors interchangeable on the unit to insure maximum recovery and to investigate the clogging characteristics of the product.

Heat is supplied by propane gas and full instrumentation assures accurate control of both inlet and outlet temperatures.

(For further information on pilot plant, write The Henszey Company, Inc., Watertown, Wis.)
5924 on Reader Service Slip.

See this month's "FP Hall of Fame Cartoon" on page 108, and then vote for large reproduction of your favorite on the Reader Service Slip.

Is filled milk best for infants?

HOWARD P. MILLEVILLE
Editor

Our article "Crisis for fat-containing foods" which appeared in the October issue contained a section with the subtitle "Filled milk best for infants."

Viewing the facts objectively, which was the purpose of the article, we erred in not placing a question mark after this subtitle. Purpose of this section was to point out that there is *some* (speculative) basis for considering filled milk — milk in which the butterfat content has been replaced with other fats — a superior product if these other fats have high linoleic acid content.

We were reporting on Dr. Hansen's studies which were published in a series of papers appearing in *Journal of Nutrition* in November and December, 1958. His studies led to the conclusion that infants could make more efficient use of their food intake if the linoleic acid content were increased up to the level where it comprises 4% of the calories, the level in human milk.*

Evaporated Milk Assn. objects

In this regard, Dr. Sime, Director of Research of the Evaporated Milk Association states: "Considering nutritional value only, you will find nowhere in the scientific literature any study proving the superiority of human milk over the modified cow's milk formulas as used during the

*As a rough approximation, the per cent of linoleic acid in gm per 100 ml of formula is 1/14 the percentage of calories contributed by linoleic acid. According to Dr. Hansen the linoleic acid in breast milk comprises 4 to 5% of the calories (0.29 to 0.36 gm per 100 ml).

It should be realized that the fatty acid intake of milk depends entirely on what the mother eats. It can be radically altered by the dietary intake and nutritional status of the mother.

Dr. Ahrens of the Rockefeller Institute has demonstrated that it is possible to very rapidly change the linoleic acid content of human milk over a ten-fold range from less than 4% to more than 40% of total fatty acids.

(*Continued on next page*)

Tom Huston Peanut Co., Columbus, Georgia, reports:

Bulk Sugar Savings Start with 2 Permaglas®

Mechanized Bulk Storage Structures

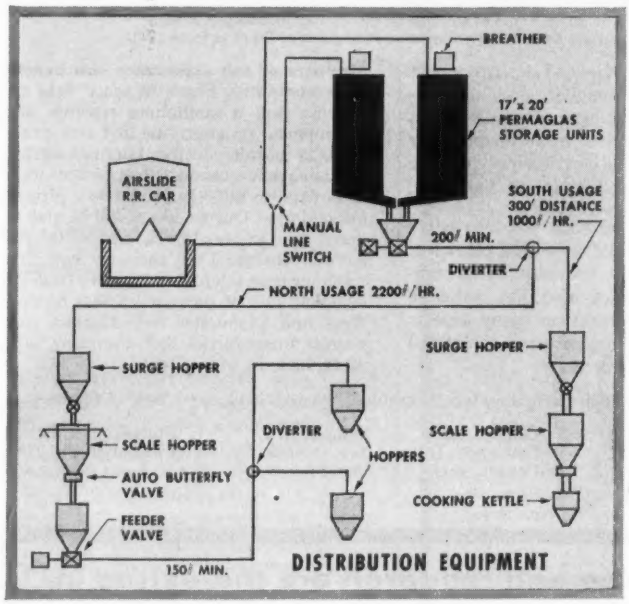
✓ *$21,000 inplant saving in sugar handling for one year*

✓ *77% less storage space than for bags*

Two 17′ x 20′ *Permaglas* Bulk Storage Units, equipped with A. O. Smith's exclusive mechanical "sweep-arm" bottom unloader, and an automatic conveying system has replaced the out-dated, expensive method used for handling and storing sugar at the Tom Huston Peanut Company's plant in Columbus, Georgia. The automatic system conveys the bulk sugar efficiently, rapidly and directly into production processing. Here are the cost-saving advantages realized with the *Permaglas* Units:

1. Elimination of inplant handling and storing of bagged sugar, resulting in savings of $21,000 per year.

2. Sugar stored in bags required 3,320 sq. ft. of space. With bulk sugar storage only 760 sq. ft. of this space is necessary. Additional cost savings realized are: more accurate weighing of sugar into premelt kettles . . . utmost sanitation in automatic system because sugar is not exposed to air until it is deposited into cooking kettles . . . no messy bags to contend with . . . safe, clean, sanitary storage of bulk sugar in the *Permaglas* Units rather than in the warehouse. Moreover, because *Permaglas* Structures are glass-lined inside and out—sugar is protected from contamination.

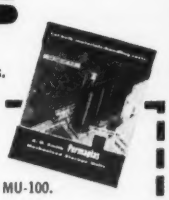


Bulk sugar is pneumatically transported from "air-slide" railroad cars into two 17′ x 20′ *Permaglas* Mechanized Storage Units at the rate of 30,000 lbs. per hour. From the storage tanks the sugar is automatically fed into two sets of surge hoppers. From here the bulk sugar goes directly into cooking kettles for processing. This automatic distribution system is the answer to high-cost inplant handling and storing of bulk sugar.

For complete details on *Permaglas* Mechanized Bulk Storage Units fill in and mail coupon.

Through research A.O. Smith *. . . a better way*

A.O.Smith
CORPORATION
HARVESTORE PRODUCTS
KANKAKEE, ILLINOIS
A. O. Smith International S.A., Milwaukee 1, Wis.



A. O. SMITH CORPORATION
Permaglas Storage Units, Dept. FP-129
Kankakee, Illinois
Send me free Permaglas Mechanized Storage Unit Bulletin MU-100.

Name.....
Title.....
Company.....
Address.....
City.....Zone....State.....

5925 on Reader Service Slip.

Using Salt Efficiently

by INTERNATIONAL SALT COMPANY, INC.

How Flow Characteristics of Salt Affect Storage and Feeding Designs

If you're planning to install new salt-storage and brine-making facilities or enlarge existing ones—or if you'd like to make your present setup more efficient—here's information that can help you.

Referring to the table, you will note that most sizes of Sterling Rock Salt commonly used to make brine have an angle of repose of 32° from the horizontal. But the angle of slide for salt on chute materials differs according to salt size and the material used. This angle ranges from 20° for smooth glass, plastic or highly polished steel to 54° for sawed wood or rough concrete.

These two principles of salt flow influence brine-making installations in three distinct ways: in storage-bin design, in computing the minimum slope for salt-feeding chutes, and in determining the proper clearance between chute opening and the salt dissolver.

1. Storage-bin design. It is sometimes thought that a salt-storage bin placed above a dissolver should incorporate a sloping hopper, so that salt will flow out freely through the opening in the bottom. This extra expense in bin construction, however, may not be necessary. The angle of repose guarantees that salt, as it pours through the discharge opening in a flat-bottomed bin, will form its own sloping bottom. What's more, the salt that doesn't flow out on its angle of repose will remain in dead storage for use in emergencies.

2. Slope of feed chutes. In some plants, local conditions make it impractical for an overhead storage bin to be exactly above the dissolver. No matter. Rock salt's varying angles of slide permit continuous salt flow in *sloping* chutes. Though a standard 45° slope is recommended because of its built-in insurance against clogged chutes, flatter slopes are possible with certain chute materials. See table.

3. Chute-to-dissolver clearance. The constant 32° angle of repose for the larger sizes makes it possible to determine just how much clearance there should be between chute opening and dissolver, to insure a full dissolver at all times. Your Sterling representative can supply data for different chute and dissolver diameters.

SIZES OF STERLING ROCK SALT	NO. 2	NO. 1	CC, A, C	FC
ANGLE OF REPOSE Salt on Salt	32° ± 2°	32° ± 2°	32° ± 2°	47° ± 6°
ANGLE OF SLIDE Glass; Smooth Plastic; Highly Polished Stainless Steel	20° ± 2°	21° ± 2°	21° ± 2°	30° ± 6°
Carbon Steel with Smooth Mill Scale; Medium-Polished Stainless Steel; Monel Metal	28° ± 2°	29° ± 2°	29° ± 2°	37° ± 3°
Carbon Steel (Heavily Rutted and Pitted); Smooth-Planed Wood; Smooth Concrete	29° ± 2°	31° ± 2°	33° ± 2°	44° ± 3°
Rough-Sawed Wood; Rough Concrete	38° ± 2°	41° ± 2°	41° ± 2°	54° ± 6°

Table gives Angle of Repose of salt on salt and Angle of Slide on various surfaces for several crystal sizes of Sterling Rock Salt.

Further data on rock salt characteristics is contained in a free booklet, "Brine for Today's Industry." This comprehensive booklet also has valuable technical information on many aspects of storing, handling or using salt. Send today for your free copy.

50 years of salt experience can benefit your company. From 50 years' field experience and a continuing research and development program (the first ever established in the salt industry), International has accumulated an unequaled amount of technical data on salt—its production, properties and uses. Our engineers will be glad to make this information available to you without charge. They can also help you select the right salt for your needs—from the complete line of premium-quality Sterling Rock and Evaporated Salt. Contact your nearest International Salt Company sales office, or write to us direct.

International Salt Company, Inc., Scranton 2, Pennsylvania • Sales Offices:

Boston, Mass.	Chicago, Ill.	Newark, N. J.	Philadelphia, Pa.
Buffalo, N. Y.	Cincinnati, O.	New Orleans, La.	Pittsburgh, Pa.
Charlotte, N. C.	Detroit, Mich.	New York, N. Y.	St. Louis, Mo.

Service and research are the extras in

STERLING SALT

INTERNATIONAL SALT COMPANY, INC.

5926 on Reader Service Slip.

(*Continued from preceding page*)

past decade. Not even Dr. Hansen's study has shown this to be true.

"Although Dr. Hansen's study does show an apparent increased efficiency of utilization of calories in infants fed breast milk or the formulas containing increased amounts of linoleic acid, other factors possibly involved were not taken into consideration.

"For example, the infants in Dr. Hansen's study were consuming varied amounts of protein depending on the type of formula fed. There have been many reports in literature, particularly those of Rose, emphasizing the need for an increased caloric intake to maintain efficient utilization of increased levels of dietary protein. Evaporated milk formulas contain considerably more protein than either breast milk or "Varamel."

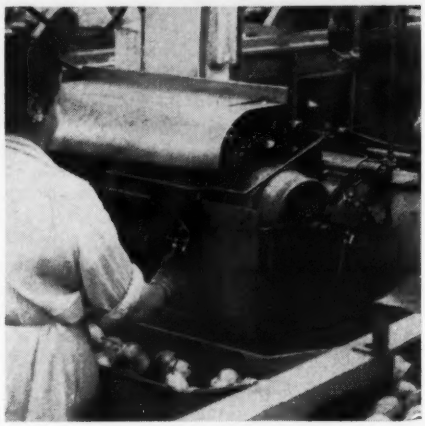
"Further, Dr. Hansen concludes his paper entitled "Essential Fatty Acids in Infant Nutrition, II," by stating that although the linoleic content of evaporated milk formulas (1% of the total calories) cannot be considered optimum, it is sufficient to meet the requirement of the infant. Your editorial implies that Dr. Hansen believes evaporated milk formulas are deficient in linoleic acid.

"In practical experience, babies fed an evaporated milk formula do just as well, if not better, in terms of growth rate and state of health than babies fed either breast milk or filled milk proprietaries, although all three contain approximately 20 calories per fluid ounce. This also does not support the theory that evaporated milk formulas are deficient in linoleic acid."

Adequate or optimum?

Dr. Hansen does acknowledge the adequacy of evaporated milk formulas insofar as linoleic acid content is concerned. His approach as indicated in his articles is: "Are these levels minimum or optimum for healthy infants? In spite of the great advances made in the artificial feeding of infants, no milk has proven to be superior to that of human milk." END

At Schuckl & Co., 35 machines core, peel, trim and segment pears



Safety bar protects operator

'Live knife' ups pear yield several cases/ton

Knife follows gage riding on pear — peels pears thinner

ONE way to make more money is to throw less product away. This year, Schuckl and Co., Sunnyvale, Calif., upped their pear yield by several cases per ton of raw material by replacing the knife assembly in their 35 pear machines.

The new assembly employs a rotary cutter blade that follows the contours of the pear, no matter what the size or shape.

A gage riding on the pear determines the depth of cut, which can be set to shave paper thin.

One operator feeds pears at rate up to 54 per minute. Machine then automatically removes core, trims ends and cuts pear into desired segments.

Another innovation at Schuckl this past season was to raise machines somewhat and place them on 2 in. pipe-stand legs, to simplify cleaning operations.

(Model 6-L pear preparation machine is manufactured by Food Machinery and Chemical Corp., Canning Machinery Div., P. O. Box 1120, San Jose 8, Calif.)

5927 on Reader Service Slip.

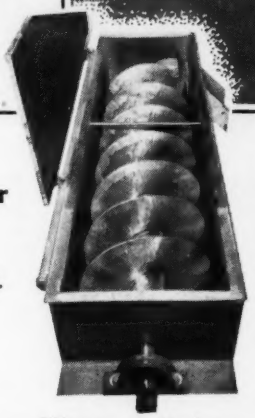
Rietz

STANDS FOR SERVICE TO FOOD PROCESS INDUSTRIES

From its major facilities in Santa Rosa, California and West Chester, Pennsylvania – and its field engineering and service offices in Chicago, Houston, Seattle and Los Angeles – Rietz has supplied size reduction, mixing and heat exchange equipment to

THE MOST IMPORTANT FOOD COMPANIES IN THE WORLD

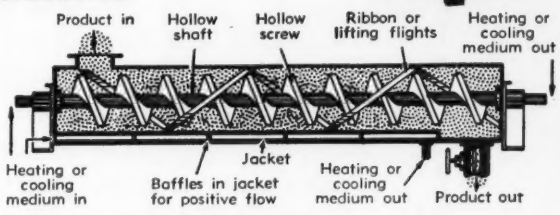
Two examples . . . . .



RIETZ Steam and Water Blancher

Sanitary, stainless steel construction, easily accessible for cleaning.
High volume, low velocity steam injection reduces blanch time – will not damage product.
Positive conveying action assures uniform blanch. Compact, efficient replacement for belt and reel blanchers . . . lower installation and operating cost.

RIETZ Thermascrew



Designed with hollow screw and jacketed trough for greater efficiency in the operations of

HEATING • COOLING • EVAPORATING OF SOLIDS, SLURRIES AND LIQUIDS

Rietz **MANUFACTURING CO.**
Santa Rosa, Calif. • West Chester, Penna.
DISINTEGRATORS • PREBREAKERS • EXTRUCTORS • THERMASCREWS

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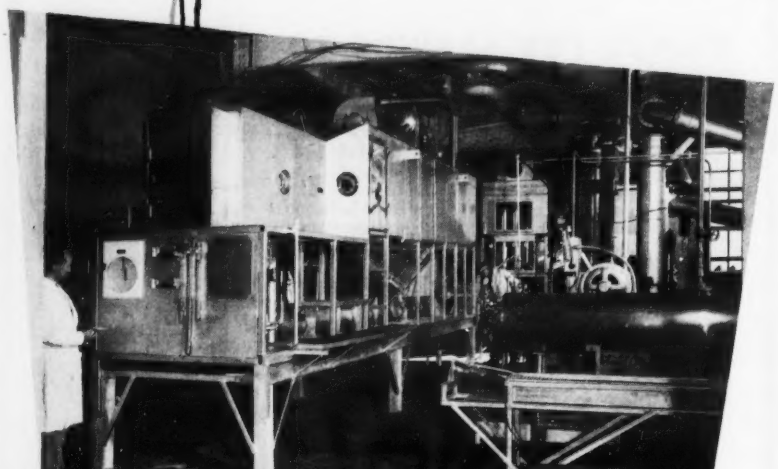
this Henszey Pilot Plant gives you a running start on your competition



Designed and built with *your* profits in mind, this newly-installed process pilot plant is ready and waiting to test and prove your processing ideas.

The scaled-down Henszey evaporating, drying and heating equipment has a capacity of up to 800 pounds per hour. It will handle dairy and food product experiments and test runs to *your* specifications.

These complete facilities, including the services of competent Henszey Engineers, are available dependent upon current test schedules. Write today for full particulars.

HENSZEY COMPANY
INCORPORATED
Dept. FP
WATERTOWN, WISCONSIN

ANOTHER HENSZEY PROCESSING *first*

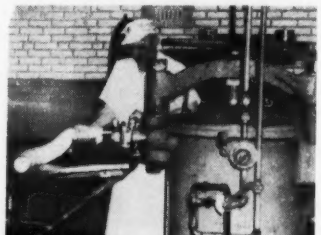
5929 on Reader Service Slip.

processing

Drying compressed air safeguards machines, product

Problem: Unless excess moisture—which condenses out of compressed air as it cools—is removed, it can cause problems such as rusting and sluggish operation of air-operated equipment.

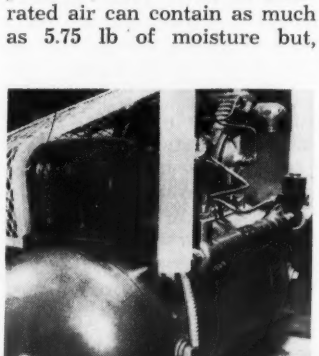
Consider the system at Ayo Packing Co., New Britain, Conn., where a 3 hp compressor supplies 14 cfm of air to a sausage stuffer.



Free-floating piston in sausage stuffer is raised by compressed air coming from compressor at 150 psi

Each shift uses 5000 cu ft of air, which under average temperature and relative humidity, carries with it a gallon of water in the form of vapor.

At 70 F and atmospheric pressure, 5000 cu ft of saturated air can contain as much as 5.75 lb of moisture but,



Aftercooler requires no special installation. It can be placed in line anywhere between compressor and receiver although it is usually mounted directly on compressor unit as shown

Outstanding Accuracy PALMER Dial Thermometer

Check these functional features

- Direct-drive Bourdon Coil with a filled system for longer lasting accuracy.
- Stem can be placed at any desired angle and case can be rotated to most readable position.
- External calibration for zero setting.
- Unaffected by stem alignment.
- Accurate to one scale division.
- No sticking at any temperature.
- Non-corrosive case.

PALMER THERMOMETERS, INC.
Mfrs. of Industrial Laboratory, Recording and Dial Thermometers
2515 Norwood Ave., Cincinnati 12, O.

5930 on Reader Service Slip.

when compressed, it will hold only a fraction of this moisture. Thus air compressed to 200 psi and cooled back to 70 F will be able to hold only 1/16 of its original water vapor.

Solution: Aftercooler, see photo below, cools hot compressed air and thus removes excess water. Since temperature of compressed air is now below that of pipe lines and stuffer cylinder, there is no further condensation.

Aftercooler has inner tube through which 1 gpm of cooling water flows countercurrent to air. Inner tube is constructed with protruding fins which provide more surface for cooling.

Results: Compressed air is cooled to within 10 degrees of inlet water temperature. Over 90 per cent of excess moisture and oil in air is condensed and removed by aftercooler.

(Compressor and aftercooler are products of the Ingersoll-Rand Co., 11 Broadway, New York 4, N.Y.)
5931 on Reader Service Slip.

Automatically de-sludging centrifuge

Sludge is ejected through discharge ports at bowl periphery while centrifuge is in motion. Simple sliding piston, activated by water pressure, opens and closes discharge ports of bowl.

Eight-page, colored bulletin describes and pictures complete operating cycle of automatic sludge discharge mechanism. Brochure also presents detailed cross-section of machine showing how flow of feed, sludge and purified stream are handled.

Five models for desludging a variety of materials are thus compared and described.

Bulletin includes recommended installation lay-outs and a table showing capacity of each of the five models.

("Westfalia Automatic De-Sludgers," Bulletin No. 2177, is available from Centrico, Inc., 75 W. Forest Ave., Englewood, N.J.)
5932 on Reader Service Slip.

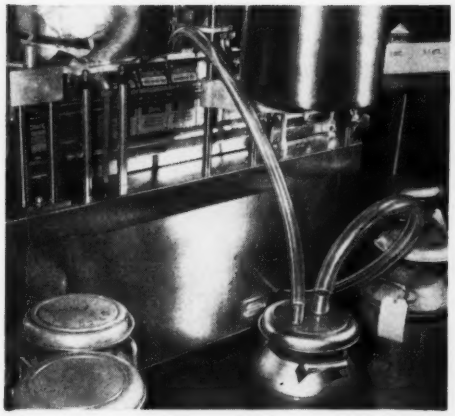
UNMATCHED for
• SAFE • EASY • ECONOMICAL
Piping of Liquid Foods and Beverages

Combining the non-contaminating properties of stainless steel . . . the flexibility of rubber . . . the clearness of glass . . . and the toughness of leather, Tygon plastic Tubing, Formulation B44-3, has no peer in food handling applications.

Completely odorless, tasteless and non-toxic, Tygon B44-3 is safe for use with even the most flavor-sensitive foods and beverages.* With a surface smoothness far greater than that of either rubber or stainless steel, Tygon will not trap minute food particles which foster bacterial growth. Tygon can be quickly cleaned, is unaffected by all common cleaning agents, and can be sterilized with steam (open-end flushing) or bactericides.

Available in over 65 standard sizes up to 4" I.D., flexible Tygon can be used with a wide range of fittings, can be put into service quickly and inexpensively.

**For processed milk and milk products, use Formulation B44-4*



Compare the unique advantages of Tygon B44-3 with any other piping medium and you'll see why more and more bottlers and food processors are standardizing on Tygon. Write for your free copy of informative Bulletin T-100 . . . today!

OUR 100th YEAR

Plastics and Synthetics Division

U. S. STONEWARE
AKRON 9, OHIO

Tygon is a registered Trade-Mark of The U. S. Stoneware Co.

416F-1

5933 on Reader Service Slip.

High Volume Fish Stick Production!

100,000/HOUR...

RIMCO Automatic — 80,000 to 100,000 fish sticks per hour.

RIMCO Semi-Automatic — 15,000 to 20,000 fish sticks per hour.

- 30% saving in fish sawdust
- Automatic — no operator
- Semi-Automatic — one operator
- Easy to operate
- Fast Cleaning
- Floor space — less than 4' x 4'
- Highest safety
- Stainless steel throughout
- Fully automatic spreading, dividing & positioning of sticks for breading

Be sure to investigate the revolutionary new RIMCO fish slicing machines. An installation in your plant will increase your production and reduce your costs.

A RIMCO PRODUCT

Write, wire or phone today. Complete technical data and engineering consultation will be furnished (gratis, of course).

RIMBACH MFG. CO. INC.
Designing — Building — Manufacturing Special Food Handling Machines
1659 West 135th St.
Gardena, California
(Los Angeles Area)

5934 on Reader Service Slip.

Puts 'instant' into home food drinks . . .

takes the shaking out of milk shakes

Long stirring and shaking are no longer necessary in preparing milk shakes from Penick and Ford's Cocomalt.

The fine powder of Cocomalt is now agglomerated into small porous clusters by an instantizing process.

Whereas liquid penetrates fine powder with difficulty, it quickly penetrates a mass of these porous clusters and dissolves them.

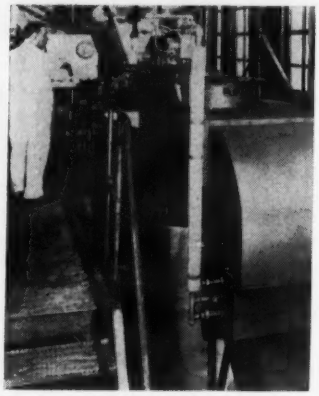
Operator checks volume of package against weight to determine density of finished product

Instantizing process is relatively simple. Transition from fine powder to an agglomerated powder takes place while particles are suspended in air.

Particles are first treated with steam so that they will adhere together. After the desired degree of agglomeration is accomplished, the added excess surface moisture is removed.

Entire process is contained within cone-shaped unit, see photos. Fine powder enters at top and passes through jet of steam where each particle picks up a bit of moisture.

Continuing downward through a heated air stream, the moist particles pass through turbulent area where agglomeration takes place. At the same time, drying air is introduced to remove moisture. The clusters thus formed drop to bottom of cone for removal.



After making bulk-density test, control devices are set and operation of unit is automatic

Process can be adjusted for various densities of product. Once adjustments have been made for the density desired, controllers make operation automatic.

(Instantizer is made by the Blaw-Knox Company, Dairy Equipment Division, Mora, Minnesota.)
5935 on Reader Service Slip.

Vibratory screening from 100 mesh to 3 in. lumps

Dust-tight cover prevents loss of material, haziness in air

Uses: For screening food products, grains, feeds and other heavy, hard-to-handle bulk materials.

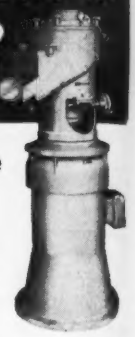
Features: Vibratory screen has 4 ft by 6 ft screening surface; can be equipped with single or double deck screening areas.

Screens are easily replaceable and are furnished in variety of types and mesh sizes.

Description: Screen can be floor or suspension mounted.

Driving unit is a self-contained electrically powered rotary vibrator. It is totally enclosed, pressure-tight, wa-

What's News in Milling?



Modern Morehouse Mills Increase Chocolate Coatings Production

Chocolates have proven an easy mark for the modern high-speed attrition grinding principles originated by Morehouse Mills. Requiring only a fraction of the space of ordinary mills, the Morehouse is multiplying production rates and cutting costs. Here are some prime examples:

Increased speed for chocolate coatings
Excellent stability and smoothness, plus exceedingly-high production, is the Morehouse Mill record in processing of various formulas of cocoa powder or synthetic lignin, vegetable fat of titre equal to that of the original cocoa butter, sugar, milk solids, etc.

More efficient chocolate liquor processing
Processors using 3-stage stone mills can now increase the output of these mills: First, grind the nibs into a coarse liquor on a Morehouse Mill model 2800, then cool, and finish on the 3-stage mill. Production can increase to as much as 2000 lbs. per 3-stage mill hour, with less power.

Another method using Morehouse Mills only gives equal production, but lowers investment in machinery: Handle original grinding on the model 2800, cool as above, and finish on two 800 series mills.

If your product requires grinding, dispersing, disintegrating, emulsifying or homogenizing, there is a Morehouse Mill to do it better, faster, at lower cost and in less space.

Let us prove it in your plant— at our risk!

Write us today about your problem.

MOREHOUSE COWLES
MOREHOUSE-COWLES, INC.
1150 San Fernando Road
Los Angeles 65, Calif.

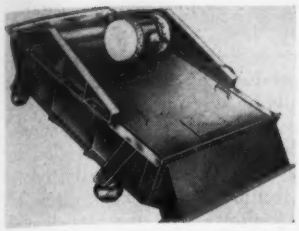
Representatives in Principal Cities
Convenient Lease and Time-Payment Plans

MOREHOUSE-COWLES, INC.
1150 San Fernando Road, Los Angeles 65, Calif.
Please send me information on use of Morehouse Mills in processing (product) .....

Name _____ Title _____
Firm _____
Address _____
City _____ Zone _____ State _____

5941

5936 on Reader Service Slip.



Vibratory screen can be equipped with 900 or 1800 rpm drive

ter proof with sealed-in, air-oil mist lubrication.

(RVS-146 Vibratory Screen is made by the Syntron Company, 111 Lexington Ave., Homer City, Pa.)
5937 on Reader Service Slip.

Schafers Bakery automates bread cooling

Scheduling 70 varieties of bread no problem

New cooler at Schafers Bakery of Lansing, Mich. cools up to 200 loaves of bread per minute when on a 58 minute cycle. Center of each loaf leaves cooler within 3 degrees of room temperature.

When on 70 minute cycle, up to 164 loaves per minute are cooled.

Bread enters front end of cooler on left side, moves to top of cooler and is conveyed along its upper run in a rack.

Cooler is equipped with aluminum racks, and an automatic rack washer. Air is drawn through filters near floor and discharged through top

At rear of cooler, rack is lowered to bottom run, and begins its travel toward front. Loaves emerge from cooler at right side.

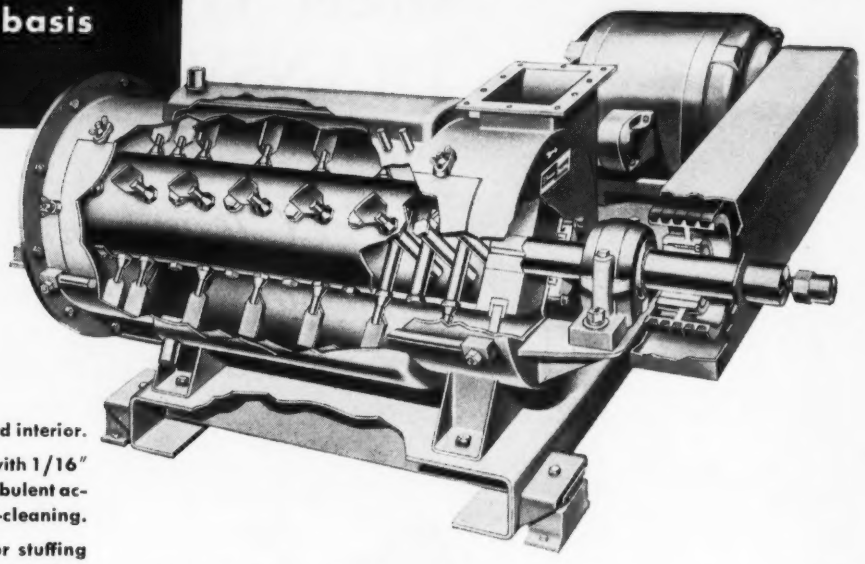
Bread is cooled by an air stream which moves upward

(*Continued on next page*)

There's one sure way to get intimate mixing of dry and semi-dry material on a continuous basis

Strong Scott

TURBULIZER®



EXCLUSIVE TURBULIZER FEATURES

- Heavy steel shell with machined interior.
- Paddles revolve at high speed with 1/16" clearance to shell, creating a turbulent action that makes Turbulizer self-cleaning.
- Choice of lip type, air purge or stuffing box seals. All are of split construction for quick disassembly. (Lip type seal shown.)
- Hinged door is machined as an integral part of the shell giving a perfectly smooth interior surface.
- May be equipped with jacket up to 150 PSI for heat transfer medium.
- Hollow rotor shaft for heat transfer medium gives added temperature control.
- Inlet nozzles available for adding liquids.
- Quick acting heavy lug type catches—no nuts or bolts to remove.
- Tangential inlet and discharge prevent material hang-up.
- Heavy duty outboard bearings.
- Rotating joints for easy connection to heat transfer medium source.

The Turbulizer solves many dispersion problems in the chemical and food industries. Adjustable-pitch paddles, revolving at high speed, result in the combined action of turbulence, shear and impact providing intense dispersion. These actions can be varied to obtain desired results on a specific material.

A completely smooth inner surface with 1/16" clearance paddles, assures thorough mixing, eliminates material hang-up, leaves no dead pockets of unmixed material and provides a self-cleaning operation.

In addition to the numerous features shown here, advantages of the Turbulizer include better product uniformity, increased production, plus lower labor, installation and up-keep costs.

Write for complete details...

Please send information on the Turbulizer

NAME_____

TITLE_____

COMPANY_____

ADDRESS_____

CITY_____ STATE_____

The Strong Scott Mfg. Co.

451 TAFT STREET NE • MINNEAPOLIS 13, MINNESOTA

EQUIPMENT DESIGNED FOR BETTER PROCESSING

5938 on Reader Service Slip.

Give your product slices the *"beauty treatment"* with the Urschel high speed Model "OV" TRANSVERSE SLICER

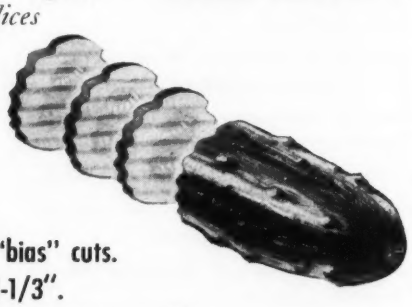
Urschel Model "OV" Slicer

Clean, uniform, better-than-ever cross-cuts on

PICKLES
CARROTS
CELERY
RHUBARB
BROCCOLI
OKRA
SQUASH
BAMBOO SHOOTS
WATER CHESTNUTS

Plain Slices

Corrugated Slices



OPERATING PRINCIPLE

The product to be cut is dropped into a hopper through which it feeds onto two high speed conveyor belts, each sloping inwardly to form a "V" cross-section. • A third conveyor belt then comes down over the top to complete the product enclosure. • Thus, the product enters the slicing wheel completely surrounded by moving conveyor belts and slicing wheel corrugated rolls which insures its positive feed into the knives. • This action virtually eliminates plugging of the machine, and, since the feed to the knives is positive, "thin" slices occur infrequently. • The new unit is so positive in its feeding action that it will feed leafy products easily. • The "V" shape formed by the belts keeps the product in constant alignment with the cutting knives regardless of product diameter, practically eliminating "bias" cuts.

- ***Positive*** **feed action.**
- **No product crushing.**
- **Practically eliminates "thin" or "bias" cuts.**
- **Cuts thicknesses from 1/16" to 1-1/3".**
- **High capacity feeding with maximum cutting yield.**
- **Compact—engineered for long dependable service and low maintenance.**

PRECISION HIGH-SPEED FOOD CUTTING EQUIPMENT

URSCHEL LABORATORIES INC.
VALPARAISO, INDIANA

Designers and manufacturers of precision, high speed cutting equipment for food products

Stop at Urschel Booth No. 202, Canner's National Convention, Miami Beach, January 18-20, 1960.

5939 on Reader Service Slip.

(*Continued from preceding page*)

at low velocity, contacting coolest loaves first and hotter products after air has progressively warmed.

Fan system for air-movement is closely controlled to provide greater flexibility in circulating air regardless of weather. This assures loaves of bread that are check and wrinkle-free.

Cooling time is accurately controlled by remote-control unit with an electric time-indicator.

Bread coming from the baking oven is depanned near cooler-conveyor, 24 loaves at a time. While traveling on conveyor toward front of cooler, grouping of bread is maintained and individual loaves are automatically spaced for proper loading unto rack-shelf.

After traveling through cooler, loaves are automatically conveyed to slicers and wrapping machines.

Through improved production and better products, Jack Schafer, president, estimates that complete installation will pay for itself in two years.

(Bread cooler is a product of Baker Perkins, Inc., Saginaw, Michigan.)
5940 on Reader Service Slip.

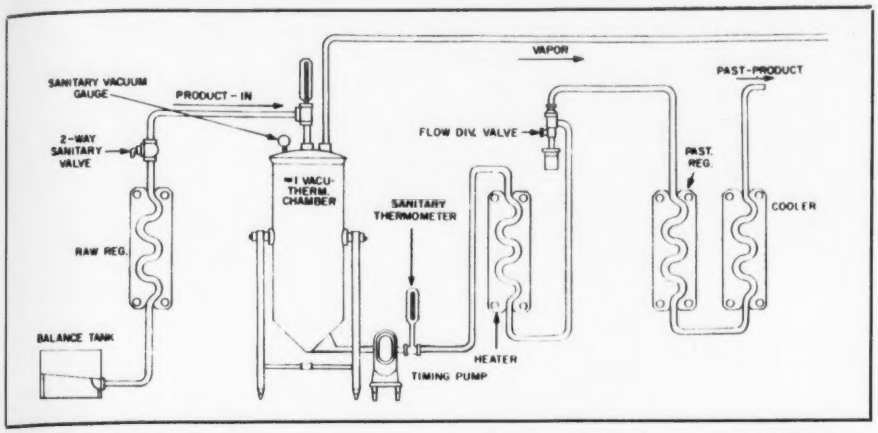
Air-tight centrifuging eliminates foaming

A 4-page, illustrated bulletin describes the characteristics of the 400 series air-tight centrifuges for milk.

Included in this series are the 425 hot milk separator, the 410 cold milk separator, and the 440 clarifier.

The bulletin features pictures of the equipment, machine specifications and capacities, and descriptions of design improvements. Similar information is also given on the Fixed-Flo regulator.

(Copies of 400 Series "Air-Tight" Centrifugals, (S. A1098-11-58), may be obtained from the De Laval Separator Company, Milk Plant Division, Poughkeepsie, New York.)
5941 on Reader Service Slip.



Raw product—milk, chocolate milk, cream or ice cream mix—is drawn from balance tank, through regenerative section of plate-heat exchanger where it is heated to 164 F with 80 per cent regeneration.

Flashing of milk in vacuum chamber instantaneously lowers temperature to 161 F. Air and volatile feed flavors are sucked out by vacuum pump maintaining a vacuum of 18 to 20 in. Hg.

Product is moved by timing pump from vacuum chamber to plate heater where UHT pasteurization at 194-200 F takes place. Calculated hold is 2-3 sec in holding tube.

Following UHT pasteurization, product passes through flow-diversion valve and then to regenerative section of plate-heat exchanger where it is cooled from 195 F to 71 F by incoming raw product.

In final step of system, milk flows through cooling section of plate-heat exchanger; is cooled to 38 F

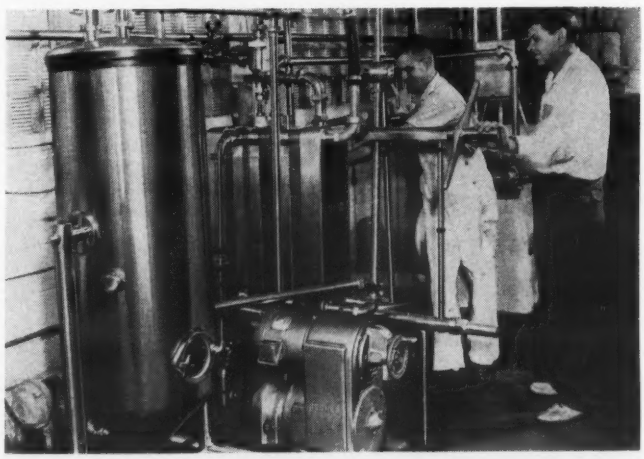
Combines UHT pasteurization with flavor control

Combination vacuum chamber and ultra-high temperature pasteurizer deaerates as well as pasteurizes dairy products such as milk, cream, chocolate milk and ice cream mix.

As a result, end product has lower bacteria count, better flavor and body. Also, shelf life is increased and smaller amounts of stabilizer are needed for ice cream mix.

At Adair Milk Farms, Champaign, Ill., system has simplified production. Milk is now processed every other day and by-products once a week. Operations are thus staggered and not over two by-

(*Continued on page* 50)



Vacuum chamber is mounted on pivots so that when necessary, it can easily be tilted for visual inspection. At Adair Milk Farm, whole system is readily adaptable to CIP—cleaning solution is simply run into balance tank. Vacuum chamber is supplied with liquid level sight glass

ENGINEERING PERSPECTIVE
THROUGH A
VENTURI

Venturi tubes were first used for measuring fluid flow. While this application has increased substantially, the use of the Venturi in important unit process operations has increased even more. A Jet-Venturi combination is literally the heart of many important manufacturing processes.

JET REFRIGERATION
JET COMPRESSORS
JET CONDENSERS
JET HEATERS
JET PUMPS
JET MIXERS
JET REACTORS
JET ABSORBERS
JET FUME SCRUBBERS
SPECIAL JET VENTURI UNITS

During the first several years of the forty-two year history of our firm, we specialized entirely on steam jet vacuum pumps (ejectors). Many thousands of these are in service throughout the country and in most foreign countries. Our tradename, EVACTOR, is an important word in engineering circles. While steam jet vacuum pumps are still our major item, other applications of Jet-Venturi equipment are increasing constantly. With the exception of closely related products such as barometric condensers, CHILL-VACTORS, and CONVACTOR* systems, all of our activity is directed to the one purpose of making Jet-Venturi units more efficient, more dependable, more economical, and to apply them to an increasing number of industrial applications.

* The CONVACTOR is a dual condensing system for economic and efficient recovery of high boiling components from water vapor.

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Croll-Reynolds CO., INC.

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Chill-VACTORS® • Steam-Jet EVACTORS® • Aqua-VACTORS® • Fume Scrubbers • Special Jet Apparatus

5942 on Reader Service Slip.

HOMOGENIZATION INSURES FLAVOR UNIFORMITY
IN DEL MONTE TOMATO CATSUP

Profitable Brands Start With Cherry-Burrell Processing Equipment

California Packing Corp. uses Cherry-Burrell Homogenizers to insure flavor uniformity in Del Monte Catsup.

Smooth. Even textured. Pours easy, too. On meats from steak to hot dogs, Del Monte Tomato Catsup is the flavor favorite of families throughout the country.

Pineapple distilled vinegar makes tomato flavor come alive in Del Monte Catsup — every bottle, every time. Cherry-Burrell Superhomo homogenizers are used to insure this flavor uniformity — smooth, even texture, too.

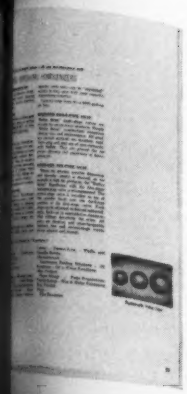
Superhomo homogenizers do the job so thoroughly there's no chance of liquid separation back to a pre-homogenized state. High-speed shearing action of homogenizing valve reduces pectin particles to equal size. Disperses particles, flavoring oils and other ingredients, evenly throughout the product.

In-plant profit, too. Hydraulic sealing for maximum wear. Pressure inside of cylinder block takes over during operation. Completely seals all gaskets. Gives longer gasket and plunger life. Low operating pressures cut down peak load demands, reduce wear on moving parts.

Another Cherry-Burrell product used extensively in the food industry is the Thermutator heat exchanger. Specially designed for use on heavy-bodied products, it heats to 350° F., cools to —50° F. without burn-on or freeze-on.

A Cherry-Burrell Sales Engineer will be glad to show you how these and other Cherry-Burrell products can help solve your processing problem. Call today. There's no obligation.

Equipment for homogenizing, heating, cooling, flavorizing, storing, separating, freezing, mixing, packaging and conveying.



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CORPORATION
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FREE COPY OF CHERRY-BURRELL'S
FOOD PROCESSING
EQUIPMENT CATALOG
JUST WRITE US.
YOUR CATALOG WILL BE SENT BY RETURN MAIL.

5943 on Reader Service Slip.

Double-rotor action for impact milling

Contra-rotating, centrifugal impact mill combines double-rotor action with lower rotational speeds to achieve higher impact velocities — thereby increasing operating efficiency.

Mill converts rotational energy and centrifugal force into impact force to reduce particles. There are no screens, cutters, attrition or close tolerances in path of product.

Four-page, illustrated folder presents information on applications for grain and food mixes. Also included are facts and figures on wear resistance as well as motor, rotor and installation specifications.

("Entoleter ControMil" brochure is available from Safety Industries, Inc., Entoleter Division, PO Box 904, New Haven, Connecticut.)
5944 on Reader Service Slip.

Design dryers for application

All rotary dryers and coolers are designed to deliver high efficiency on the job for which they are manufactured.

Sixteen page bulletin discusses and illustrates various types of dryers such as indirect-heat dryers, return-current dryers, counter-current direct-heat dryers and parallel-current direct-heat dryers.

Several pages are devoted to selection of dryers and their construction. Another section explains advantages and features of fluidized bed dryers.

Availability of a laboratory for conducting tests for customers is also explained in bulletin. Laboratory contains a pilot-size fluidized bed dryer, pilot-size models of various horizontal dryers as well as other pieces of auxiliary equipment.

("Louisville rotary drying equipment," Bulletin 59 L, is available from General American Transportation Corporation, 135 S. LaSalle St., Chicago 90, Ill.)
5945 on Reader Service Slip.

(*Continued from page 47*)

products are run on any processing day.

Flashing into vacuum chamber prior to pasteurization not only eliminates entrapped air, thus preventing cooked flavor, but also removes volatile feed or "cowy" flavors.

System for milk is based on 80 per cent regeneration (164 F to vacuum chamber); regeneration can be raised to 85 per cent (168 F).

Steam is used in final heating section of plate-heat exchanger. Low temperature differential between steam and product is maintained because of excellent heat transfer coefficient, thus preventing burn-on. Vacuum-steam combination can be used to obtain the lowest possible temperature differential.

Cost of whole system is little more than HTST units.

If HTST units are already installed, they can readily be converted to UHT in plant with few simple changes and the addition of vacuum chamber. Because chamber is mounted on self-supporting stand, it can be installed to suit space requirements.

Four models are available, ranging in capacity from 2000 to 80,000 lb/hr.

(UHT pasteurizer is a product of The De Laval Separator Company, Poughkeepsie, New York.)

5947 on Reader Service Slip.

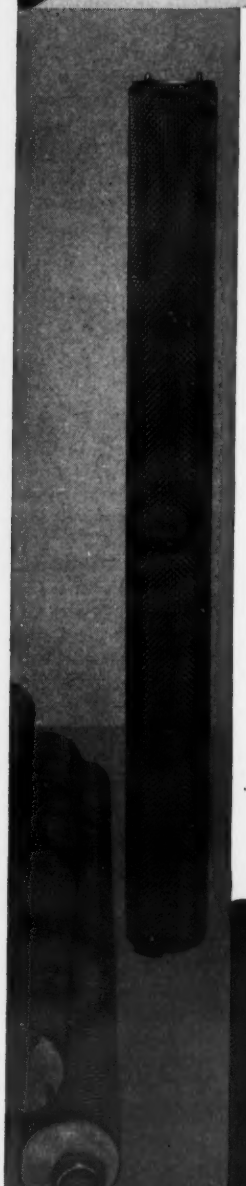
Improve design of platecoil heat exchanger

Heat exchangers consist of two embossed metal sheets which are seam-welded together to form channels through which heating or cooling media flows.

They can be used for heating or cooling liquids in rectangular tanks, cylindrical tanks, deep tanks and jacketed kettles. Mounting can be internal or external.

Improved design avoids single header; distributes steam, or other media, to three sets of horizontal passes independently.

(*Continued on page 52*)



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that's why you automatically get service with your order . . . whether you need dozens of midget strainers or a single giant-sized retaining screen.

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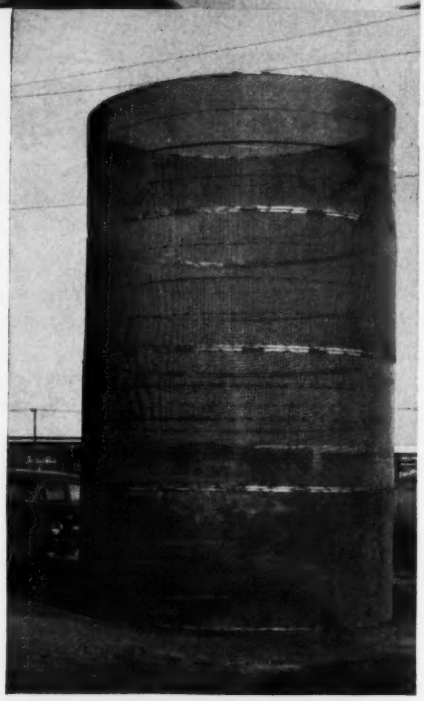
The Cambridge Wire Cloth Co.

Department H • Cambridge 12, Md.

Manufacturers of Wire Cloth, Metal-Mesh Conveyor Belts, Wire Cloth Fabrications



5946 on Reader Service Slip.

Plants, Companies, Personalities

Prince Macaroni Mfg. Company

Lowell, Mass., will establish a branch plant in Puerto Rico to produce macaroni and allied products under the island's "Operation Bootstrap" development program. Over 50 New England companies have established branch plants in Puerto Rico since 1950, under the development program which accepts only bona fide expansions or brand new operations.

Red Star Yeast and Products Company

Milwaukee, will shortly begin construction of a $1 million, 40,000-sq-ft general office and laboratory center in suburban Glendale. Production and pilot plant facilities will continue to be located at a separate plant in Milwaukee.

International Flavors & Fragrances (Canada) Ltd.

has consolidated all flavor and fragrance operations at one location in Toronto, under direction of Fred Crowhurst, vice president.

Borden Company

has acquired Causse' Manufacturing & Importing Company, Jersey City, N.J., manufacturer and importer of preserved fruits. The firm will continue to operate under the Causse' name, under supervision of the Borden Foods Company, a Borden division.

General Mills

has acquired American Crabmeat Company, Inc., Boston — manufacturers of Three Little Kittens, a canned cat food product. The move is a planned step in General Mills' expanding pet food activities, which originated back in 1930.

For more information on product at right, circle 5948 see information request blank opposite last page.

Fill in and mail this coupon *today* so that we can rush you your FREE box of 100 Kimwipes disposable wipers! We want you to try Kimwipes in your own plant and discover their superiority over cloth towels in food processing operations. That's why we're making this Free Offer! You'll get top performance with Kimwipes—plus top efficiency, ease of handling and economy.

Use them dry for quick, thorough absorption of shortening oils and grease. Use them wet for easy removal of sticky frosting, syrups, sugar and flour from workers' hands or machinery. Use both wet and dry for keeping equipment clean and sanitary. Available in handy pop-up packages or metal wall dispensers.

Super sanitary Kimwipes pay for themselves in savings on towel laundering, alone!

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Please send me my FREE package of Kimwipes disposable wipers, "900-L".

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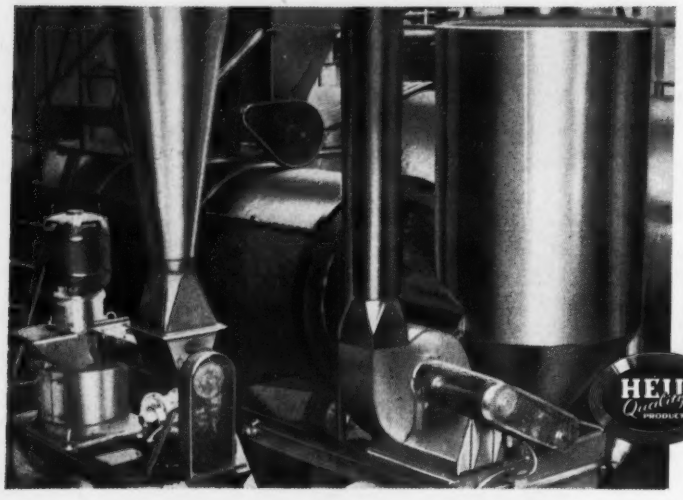
HEIL DRYERS

convert waste disposal problem into profit-making by-product



San Jose Canning Co., San Jose, Calif., uses a Heil dryer to reduce moisture content of tomato pomace from 50 to 7 percent. With additional processing it is sacked and sold to animal feed packers. Production is around 6½ tons in a 20-hour shift. Result: hauling costs are down two-thirds and San Jose earns an income from material that once cost money just to be thrown away.

A Heil dryer dries materials on a stream of hot air, with each particle correctly exposed in proportion to its moisture content. Result is quick, uniform drying. The Heil unit is compact, too, with three drying cylinders within a single drum. Write for all the facts on Heil dryers . . . capacities range from models to evaporate 500 lb up to 36,000 lb of water per hour.

THE HEIL CO.

Manufacturers of the Arnold Dryer

Milwaukee, Wisconsin

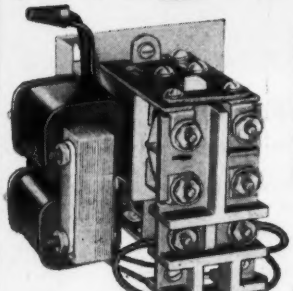
Photo courtesy of Canner/Packer Magazine

5949 on Reader Service Slip.

WARRICK Floatless Electrode Type

LIQUID LEVEL CONTROLS . . .

give you all these advantages!



No moving parts in the liquid • Easy to install • No adjustments necessary • Unaffected by acids or caustics • Unaffected by pressure or temperature • Standard 2&3 pole units listed by U/L

Write for 32-page Catalog which gives complete specifications

Two pole control shown at left

YOU CAN USE OUR CONTROLS FOR:

- Single & multiple pumps
- Motor & solenoid valves
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- Evaporators
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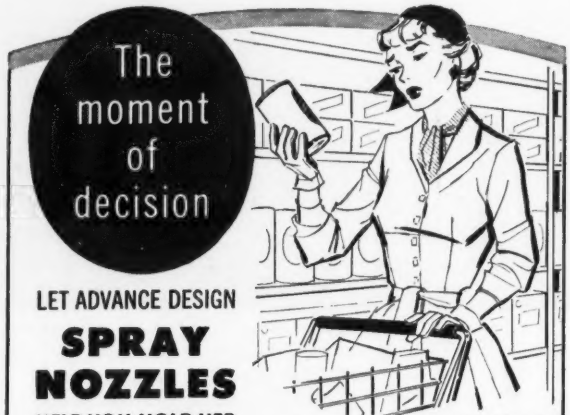
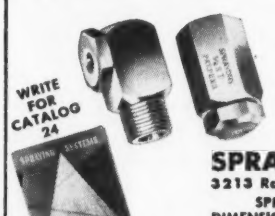


LET ADVANCE DESIGN

SPRAY NOZZLES

HELP YOU HOLD HER *by improving product quality in* WASHING, MIXING, SPRAY DRYING AND COOLING

Once you know the ideal values for such variables as particle size or impact . . . you will find Spraying Systems spray nozzles the "precision" instruments to meet your performance specifications. When product quality depends upon spray nozzles, you can depend upon Spraying Systems. Your inquiry is invited...ask for Catalog 24.



SPRAYING SYSTEMS CO.

3213 Randolph St. • BELLWOOD, ILLINOIS

SPRAY NOZZLE DESIGN FOR NEW DIMENSIONS IN CONTROL AND PERFORMANCE

5951 on Reader Service Slip.

(*Continued from page 50*)

Eight-page bulletin contains complete dimensional data for standard styles and sizes. Conversion table simplifies calculations of requirements. Construction advantages and applications are illustrated.

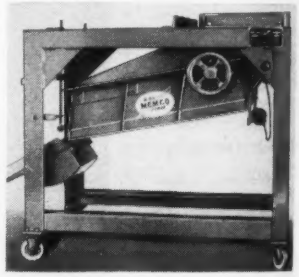
Examples of specially-designed and fabricated coils to fit specific application requirements are included.

("Multi-Zone Platecoil," Bulletin PD-1, is available from Tranter Manufacturing, Inc., Platecoil Division, Lansing 9, Mich.)

5952 on Reader Service Slip.

Mobile, combination feeder and magnetic separator

Uses: For the protection of grinding, pulverizing and screening equipment through removal of ferrous foreign bodies.



Feeder and magnetic separator can be moved between belt conveyors, vibrating conveyors or chutes, and different machinery to remove tramp iron

Features: Mobility of equipment makes it useful in operations where there are multiple small runs of varied products.

Operation: Machine has suspended-plate magnet complete with vibrating tray and secondary-plate magnet.

Product first passes under suspended-plate magnet, then over permanent-plate magnet for added protection.

(Mobile Feeder and Magnetic Separator is made by Magnetic Engineering and Manufacturing Company, 840 Van Houten Ave., Clifton, N.J.)

5953 on Reader Service Slip.

BUCKLING

cold-storage floors?

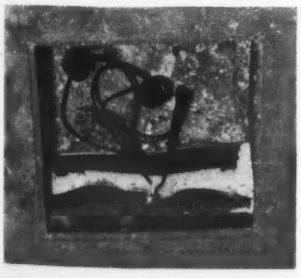
Even though floors are insulated, buckling still can occur after several years. For existing installations, a solution is electrical warming system which melts ice — prevents further freezing

PROBLEM: Poor subsoil conditions, such as fine-grained sand and ready supply of water at same level, will form ice under freezers or cold-storage rooms — even though process is quite slow. Resulting ice pressure, which in nature splits rocks, literally raises havoc under man-made buildings.

Because of long time for ice pressure to build up and because it cannot be seen, danger is well hidden. Presence of pressure, if soil conditions are not known, or if known and not provided for by sufficient protection, seldom manifests itself for years.*

Conventional repair methods for heaved floors are a headache. Room must be emptied and refrigeration shut off.

After room has thawed out, floor must be ripped up and subfloor allowed to fully thaw out. Only then can additional underflooring be installed and on top of it a new wearing floor.



Vertical pipes, containing electrical heaters, terminate in interior floor-junction box, grouted into floor

Solution: This is what had happened under large, refrigerated warehouse of Casco-Berkly in Martinsburg, W. Va. Condition was remedied by installation of an underfloor electrical warming system.

Warehouse is used for storing general food supplies by public, is maintained at −10 F.

Essentially, warming system consists of horizontal pipes which were driven under building from adjacent garage where floor elevation is at least 2 ft below freezer-floor level. After pipes were installed, electric heaters were placed in them.

Because certain parts of floor could not be reached in this manner, some heaters were installed in vertical pipes. These pipes were driven through floor into subsoil from inside warehouse.

After power had been turned on, subgrade thawed out and floor returned to its normal level. Damaged sections were then repaired or replaced.

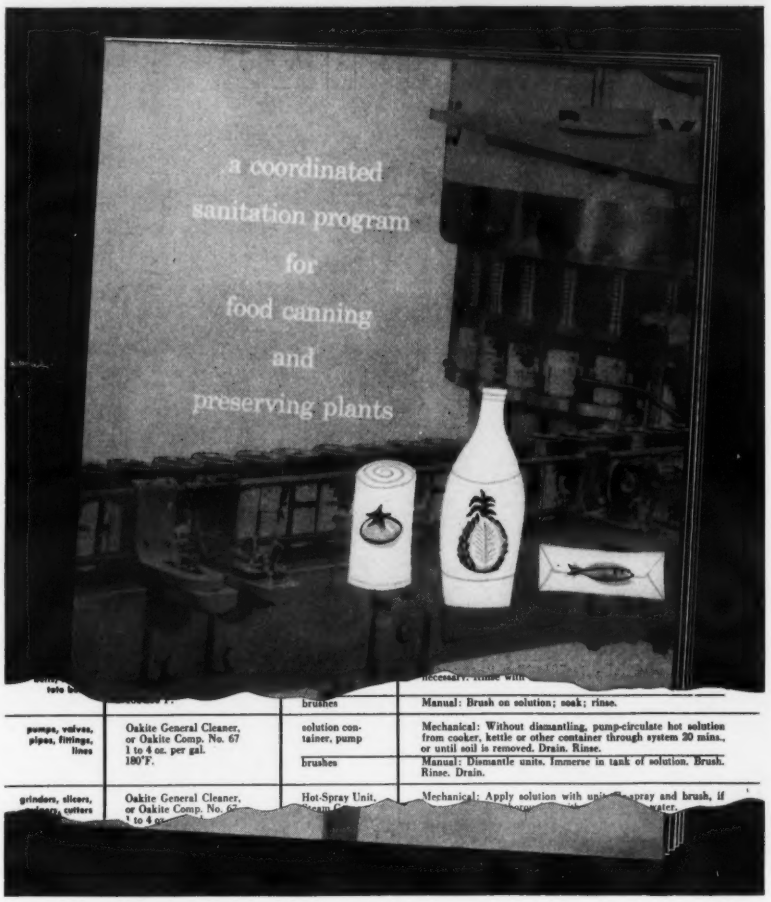
Heating system pulls 22.5 amps and uses 9.14 kw.

Results: System not only defrosted existing ice in subgrade but also maintains it defrosted, thereby assuring permanent protection.

(*Continued on next page*)

*In one specific case, floor showed first signs of heaving after 5 years. After 6 years, floor had heaved to 13 in. in spots and soil test showed that ground had frozen to depth of 9 ft. Cold-storage room was held at —10 F and had 6 in. of insulation.

The big PLUS SERVICE EXPERIENCE RESEARCH PERFORMANCE in Oakite


a coordinated
sanitation program
for
food canning
and
preserving plants
brushes
Manual: Brush on solution; soak; rinse.
pumps, valves, pipes, fittings, lines
Oakite General Cleaner, or Oakite Comp. No. 67 1 to 4 oz. per gal. 180°F.
solution container, pump
brushes
Mechanical: Without dismantling, pump-circulate hot solution from cooker, kettle or other container through system 20 mins., or until soil is removed. Drain. Rinse.
Manual: Dismantle units. Immerse in tank of solution. Brush. Rinse. Drain.
Hot-Spray Unit,
Mechanical: Apply solution with

Send today for valuable bulletin on

Canning Plant Cleaning Techniques

Detailed data charts in this bulletin give latest advanced techniques for cleaning and sanitizing food processing facilities. They describe the detergent, solution strength, solution temperature, application equipment and one or more recommended methods for solving more than 20 different *types* of cleaning problems. See example above.

Other sections discuss Sanitation, Detergency, Conveyor Chain Lubrication, Mechanized Cleaning. Helpful, factual literature like this is just one of the Big Plus factors you get when you deal with your local Oakite man. Send for your free copy of *A Coordinated Sanitation Program for Food Canning and Preserving Plants* today! Oakite Products, Inc., 26G Rector Street, New York 6, N. Y.

OAKITE
50 1909-1959 SCIENCE
years' leadership in industrial cleaning

5954 on Reader Service Slip.

(*Continued from preceding page*)

Since most of underfloor heating system was installed from outside of building, operations inside the plant were not affected.

Economies realized were two-fold: actual construction costs were lower and no substitute refrigerated warehouse space had to be found.

(Ruff underfloor warming system was installed by R. S. Noonan, Inc., Engineers and Contractors, York, Pa., under exclusive license patents.)
5956 on Reader Service Slip.

'Sanitary' welds in your own shop

When standard mill products won't do for cylinders or equipment, butt welders and planishers that produce a smooth flawless seam are the answer

The hypothetical problem: a SS pipe line is needed to transfer high pH liquid between remote processing equipment.

Sections of pipe 8 in. ID and walls ⅛ in. thick, totalling 140 ft in length, meet the requirements of pressure, support and economy.

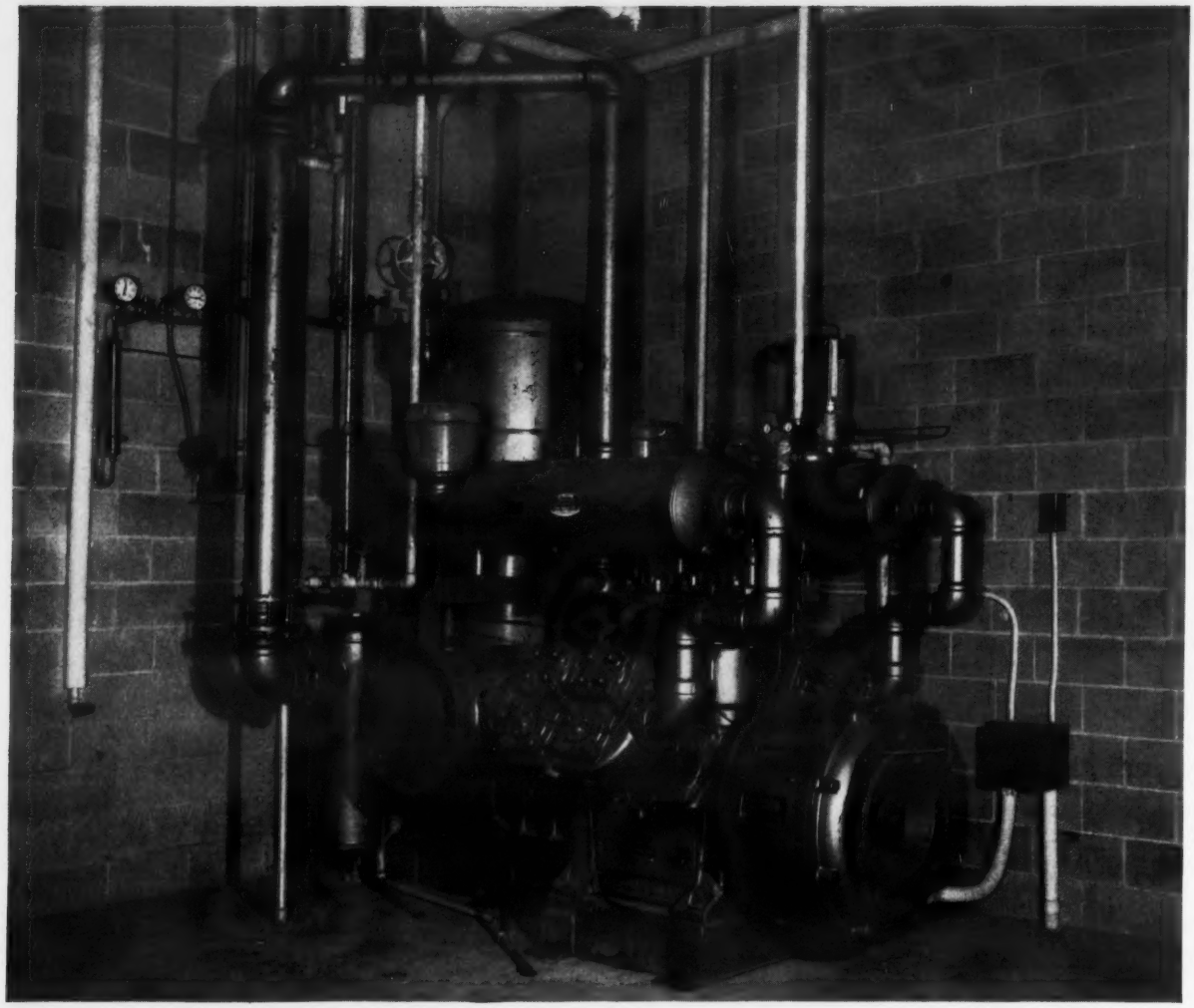
Such an item is not stocked; however sheets of the required material are.

The solution is to shear and form sheets into cylinders; then weld and join cylinders using the fused butt joint technique; finally cold work weld area to smooth finish by means of a planisher.

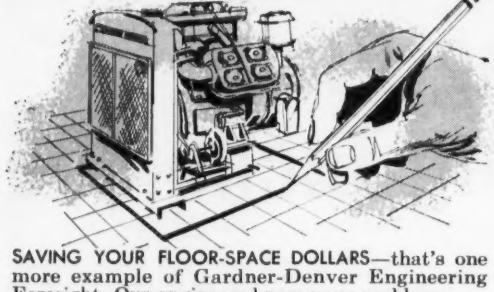
For such a fabricating job key machines consist of longitudinal and circumferential weld positioners and weld roll planishers.

These machines are capable of welding SS in thicknesses ranging from 0.005 to 0.500 in. They process the weld so as to create smooth, virtually invisible, flaw-free seams.

(Longitudinal welder and positioner and weld roll planisher are products of Airline Welding and Engineering, 785 N. Prairie Ave., Hawthorne, Cal.)
5957 on Reader Service Slip.



Space-saving WB saves floor-space dollars



SAVING YOUR FLOOR-SPACE DOLLARS—that's one more example of Gardner-Denver Engineering Foresight. Our engineers know your problems . . . design equipment to meet your needs. At Gardner-Denver there's no substitute for men—our 100-year philosophy of growth.

What's the yearly overhead for a square foot of floor space in your plant? That will indicate one of the savings you can expect—year after year—when you install a compact Gardner-Denver WB air compressor. For example, the WBJ displaces 686 cfm—occupies only a 5½′ x 6¼′ corner of your plant.

There are eight space-saving WB sizes from 142 to 1150 cfm piston displacement. Each size is a packaged unit that's easily and quickly installed without costly foundation work.

Noted for years of dependable, economical service. And here's one important reason: our workmen keep the machine *clean* during assembly. Write for Bulletin WB-10, or consult your Gardner-Denver compressor specialist.

GARDNER-DENVER Since 1859 100 1959 YEARS

EQUIPMENT TODAY FOR THE CHALLENGE OF TOMORROW

GARDNER-DENVER

Gardner-Denver Company, Quincy, Illinois

In Canada: Gardner-Denver Company (Canada), Ltd., 14 Curity Avenue, Toronto 16, Ontario

5955 on Reader Service Slip.

Disposable wipers aid cleanliness

Removal of frying-oil on hands and equipment made easy, sanitary

Cloth rags or even linen towels did not absorb enough oil to be considered satisfactory for use at Red Dot Foods' plant in Madison, Wis.

Towels not only did not absorb enough oil, but laundry service was uneconomical.

Rags, aside from not absorbing enough oil, usually wound up on floor or in corners — giving plant an unsightly appearance.

For effective control of oil accumulations, management switched to disposable industrial wipers which, after usage, are discarded in containers provided for them.

Wipers are used to clean off oil and salt from bags and plastic cups. There are 12 cups per packaging machine; 7 machines on production line

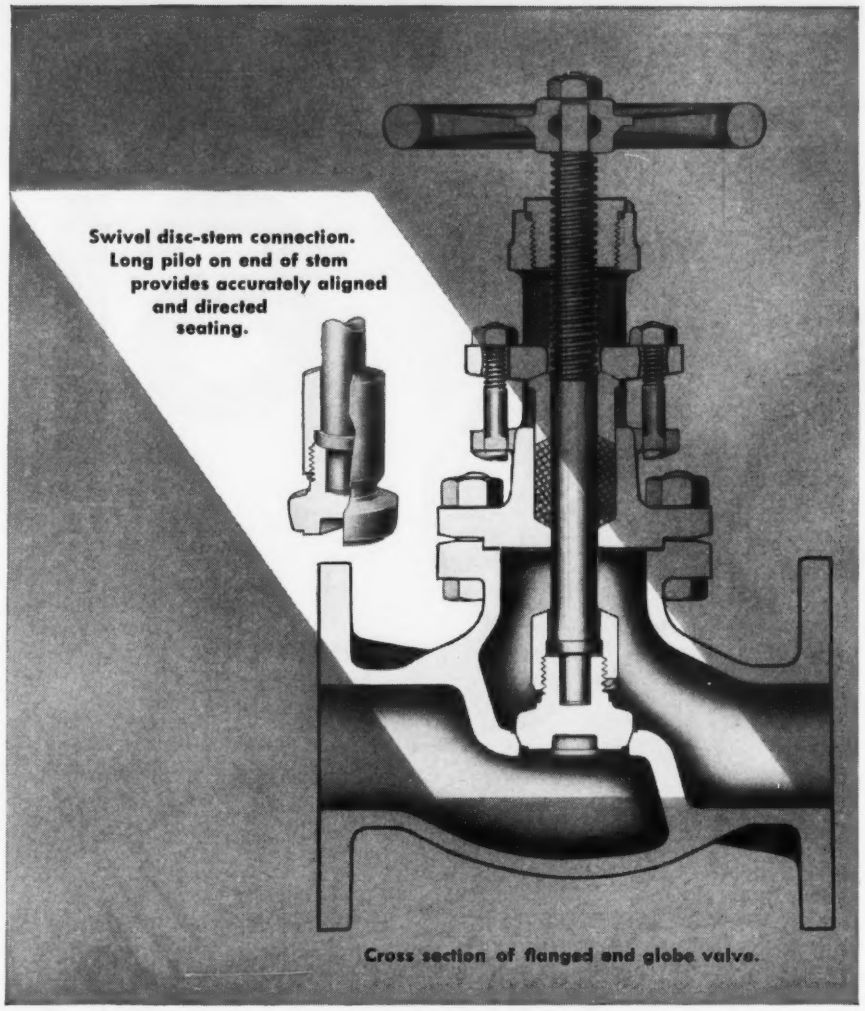
Besides keeping hands of production personnel oil-free, wipers have been very useful in removing deposits of oil and salt inside plastic cups of filling machines, see photo.

Cups must be cleaned at least once during 8-hour shift; also when product-run is changed from potato chips to shoestring potatoes or barbecue chips.

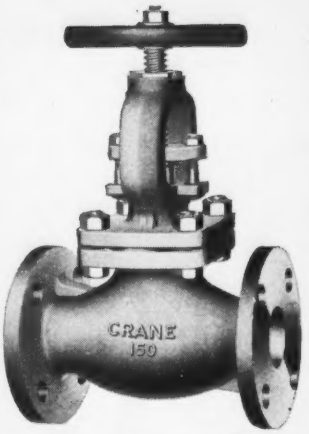
Wipers are also used for clearing blockages of vibratory conveyor system and for keeping hoods and covers on deep-fat fryers oil-free.

Fire hazard, which accumulations of oil-soaked rags and towels represent, is removed since used wipers are burned daily.

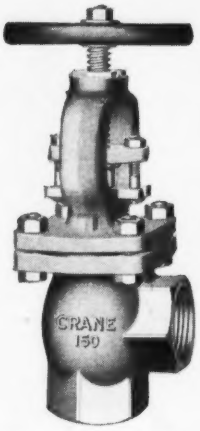
(*Continued on next page*)



Cross section of flanged end globe valve.



No. 18811 globe, ½"-6", flanged ends; ½"-2", screwed ends.



No. 18812 angle. ½"-2", screwed ends; ½"- 6", flanged ends.

How this swivel disc saves seating surfaces in Crane 18-8 SMo Globes

Even on toughest corrosive fluids, you will find these valves seating tight long after others have leaked.

The seats last longer because the Crane free swivel disc-stem connection prevents seizing and galling on the seats. The disc stops turning on contact with body seat ring, and the stem takes over all the closing torque.

Minimum clearance in disc-stem assembly prevents vibration and chatter, and the long pilot end of stem guides the disc squarely to seat.

Another feature of this disc—its modified plug type design combines the easier seating of a narrow ball-to-flat seat, and the greater resistance to erosion and scoring of a wide plug type disc. It's the ideal design for throttling.

Improved seating is but one of many refinements that make Crane 18-8 SMo globe and angle valves today's outstanding value in original cost as well as in maintenance savings.

For complete specifications and recommendations on applications for these all-stainless steel valves, consult your local Crane Representative . . . or write to address below.

CRANE® VALVES & FITTINGS

PIPE • PLUMBING • HEATING • AIR CONDITIONING

Since 1855—Crane Co., General Offices: Chicago 5, Illinois—Branches and Wholesalers Serving All Areas

5958 on Reader Service Slip.

(*Continued from preceding page*)

Further, the unsightly appearance of rag piles throughout the plant is eliminated — a major factor when it is considered that six visitor-tours travel through plant daily.

("Kimwipes" industrial wipers are a product of the Kimberly-Clark Corporation, Neenah, Wisconsin.)

5959 on Reader Service Slip.

Good trapping solves problem of

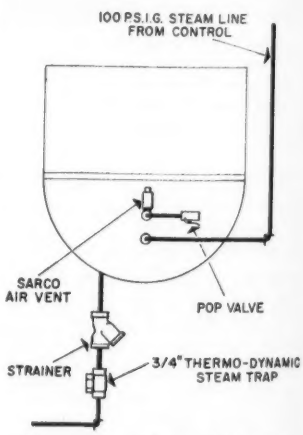
Rapid Heating

Problem: Batch cooking of cough lozenges and candy at the F & F Laboratories, Chicago, Ill., was not going according to schedule.

Cooking plan called for raising temperature of batch to 240 F in 15 minutes.

Cooking syrups is done in steam jacketed kettles using saturated steam at 100 psig. Steam is supplied through sequence timing control valve mechanism. Steam line enters jackets close to bottom of kettles.

Solution: Inadequate heat transfer indicated that condensate and air were not being discharged properly by the existing trapping system. Accumulated incondensible gases and condensate were filling



Steam trap and air vent assure rapid discharge of condensate and incondensible gases; allow uniform heating of entire steam jacket

WHO SWIPED PAGE 61

D'ja ever pick up a copy of FOOD PROCESSING with an article torn out . . . or even worse, HALF an article torn out?

It's liable to happen when copies are routed around your plant.

You can avoid this annoyance by getting your own copy of FOOD PROCESSING each month. It's easy and there is no charge. Just fill in the subscription request form opposite the inside back cover.

the steam space thus blocking heat transmission to the cooking surface.

To eliminate condensate as fast as it accumulates, each kettle was equipped with a ¾ in. Thermo-Dynamic steam trap. To assure complete venting of noncondensible gases, a ⅜ in. thermostatic air vent was installed on the pop-valve line as shown in diagram.

Result: Traps discharge condensate and air as fast as they are formed. Air vent provides supplementary relief for accumulated gases in jacket.

Steam traps have given three years of trouble-free service. Not even cleaning of traps has been required according to I. Hornstein, F & F's plant engineer.

(Thermo-Dynamic Steam Traps and Thermostatic Air Vents are products of Sarco Company, Inc., 635 Madison Ave., New York 22, N. Y.) 5960 on Reader Service Slip.

120-page, pocket size reference book

Handy booklet contains convenient tables on properties of materials, dimensions, measurements and other engineering subjects.

Often-used formulas, heat transfer and steam data as well as long list of graphical symbols for electrical diagrams are included.

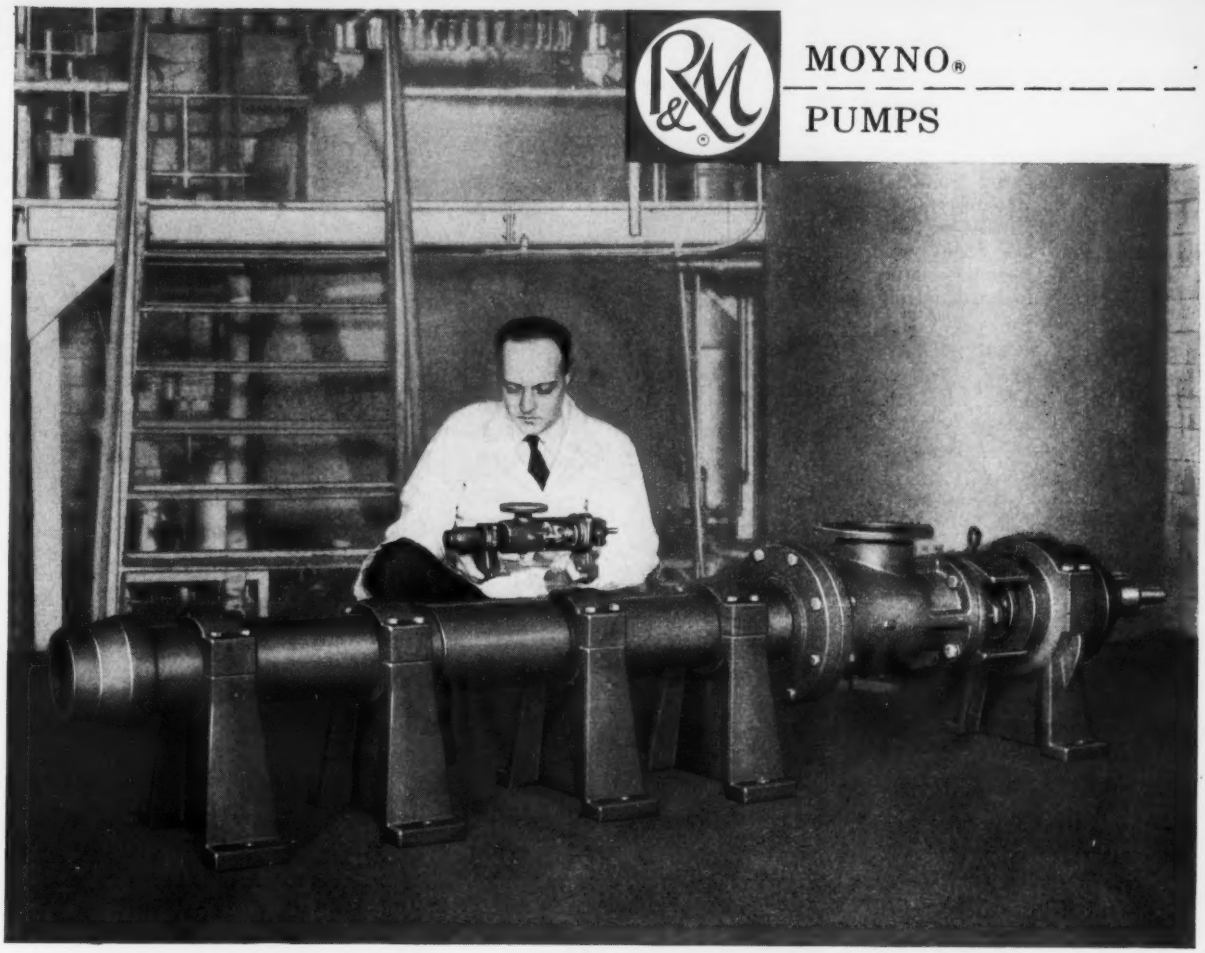
("Convenient Tables and Formulas," booklet B-3677D, is available for $0.50 from Westinghouse Electric Corporation, Box 2099, Pittsburgh 30, Pa.)

Free-rinsing liquid detergent

New general-purpose detergent has been designed for use in food plants.

With pH of 10.5 to 10.7 in recommended solution range of ½ to 2 oz/gal of water, it is easy on hands and safe on processing equipment.

(*Continued on next page*)

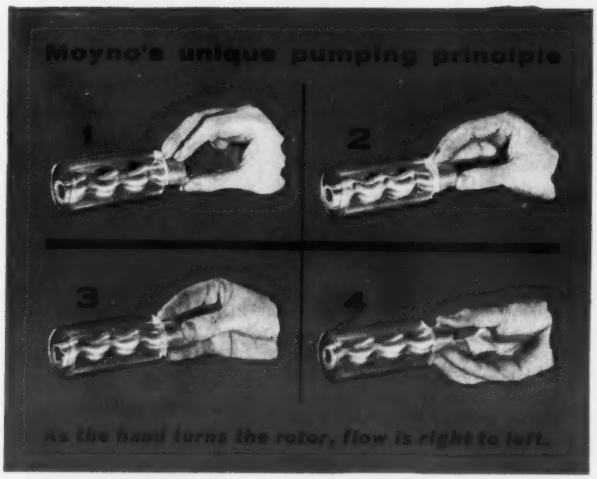


MOYNO® PUMPS ***capacities: from 1/100 to 500 gpm pressures: up to 1000 psi***

MOYNO pumps are available in nine sizes with capacities ranging from minimum metering flow to 500 gpm and pressures from zero to 1000 psi. Positive displacement delivers uniform discharge without pulsation, agitation or turbulence. Solutions ranging from thin watery slurry to extremely viscous paste, corrosives, abrasives and even solids in suspension are economically handled without excessive pump wear.

MOYNO's unique *"progressing cavity"* principle with only one moving part and special resistant internal parts slashes pump maintenance costs on problem materials that often ruin other pumps. Almost any substance that can be forced through a pipe can be pumped by a MOYNO.

To learn how a MOYNO can cut your pumping costs, write today for Bulletin 30-FP



ROBBINS & MYERS, INC.

motors, household fans, Propellair industrial fans, hoists, Moyno industrial pumps

SPRINGFIELD, OHIO · BRANTFORD, ONTARIO

5961 on Reader Service Slip.

(*Continued from preceding page*)

Solution can be applied by hand, brush or pressure spray in temperature range from 150 F down to room temperature.

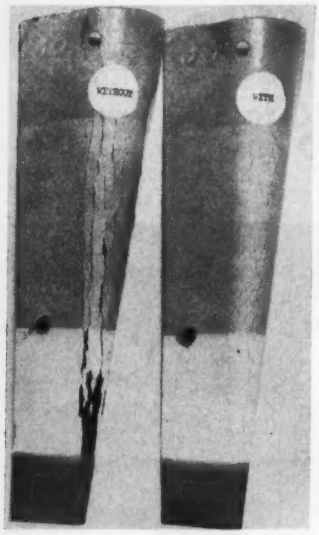
Non-toxic, non-solvent liquid detergent has good wetting-out properties; has stable sudsing action in hard or soft water, yet rinses freely.

(Oakite Liqui-Det No. 2 is produced by Oakite Products, Inc., 127 A Rector St., New York 6, New York.)
5962 on Reader Service Slip.

Penetrating primer for rusty surfaces

Because of wetting agent in primer, only surface preparation necessary is wire brushing to remove loose, flaky rust

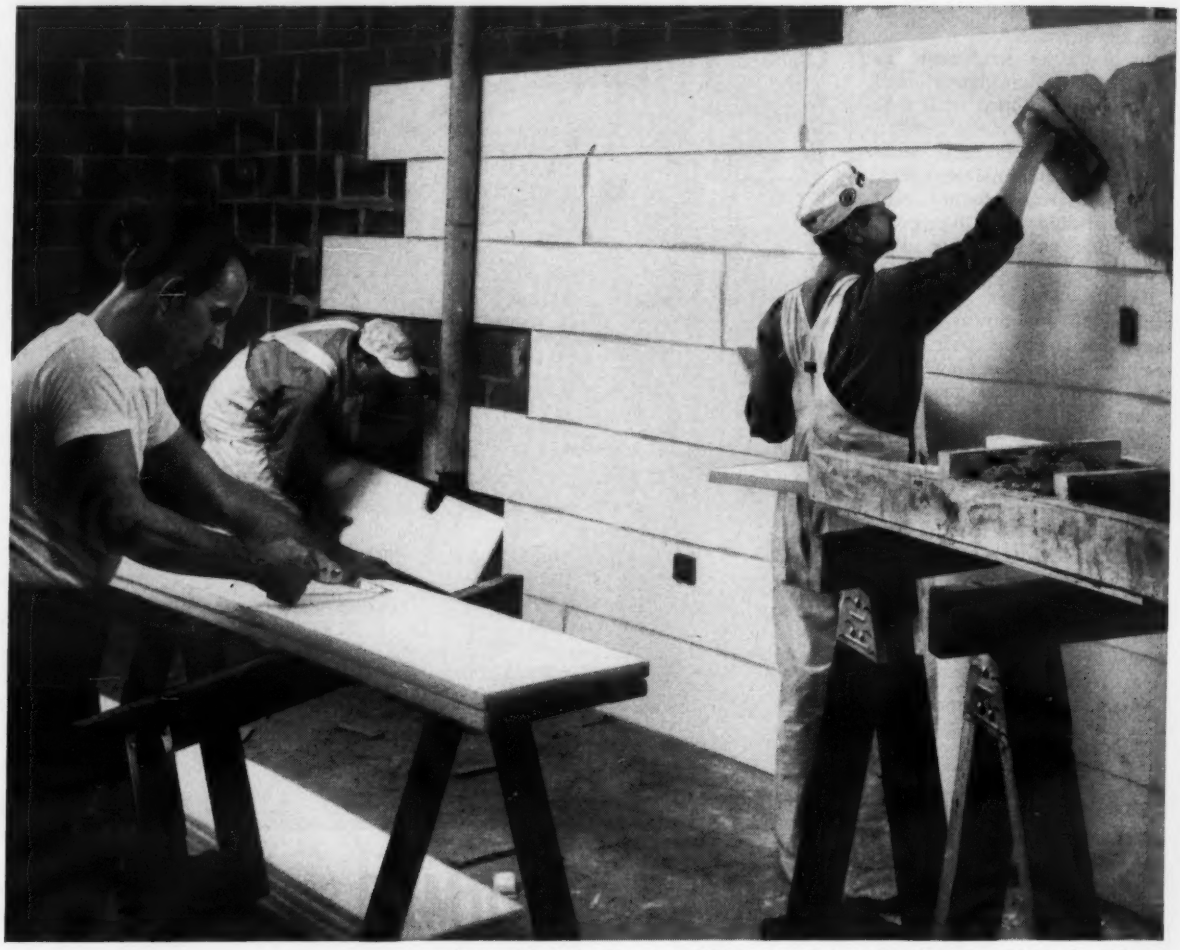
Uses: For painting rusty or clean metal surfaces prior to finish coat. Paint-vehicle can be used with all primer pigments such as red lead, zinc chromate or other anti-corrosive pigments.



Test panels coated with average primer (left), and with primer containing penetrating liquid (right). Prior to painting, rusty panels received no surface preparation. Panels are shown after weatherometer test and conical mandrel bend-test

Features-Description: Phenolic resin wetting agent in

DOW | INSULATION



Approved Insulation Contractor: Mid-Continent Industrial Insulation, Inc., Kansas City, Missouri.

STYROFOAM®

helps supermarkets keep the "crunch" in the radish and the "crackle" in the lettuce!

This is Safeway's new 50,000-square-foot Perishable Products distribution center in Wichita, Kansas. Styrofoam* was used to insulate the freezer room and the dairy and produce coolers for two reasons: it would do an effective, permanent job of insulating cold space under difficult conditions of humidity and temperature; and it possessed outstanding application and structural advantages.

Styrofoam was bonded directly to the cinder block walls with asphalt adhesive, and an interior finish coat of plaster was applied directly to the Styrofoam. For the floors, a five-inch concrete slab was poured directly over Styrofoam. The high compressive strength and rigidity of Styrofoam eliminated all need for floor reinforcement, and for furring and lathing the walls.

Because this plastic foam insulation contains millions of tiny non-interconnecting air cells, it has permanent high resistance to water and water vapor. Water won't penetrate Styrofoam, won't gradually reduce insulating efficiency, won't cause freezing or swelling. This was important in Safeway's zero-temperature areas, and in the produce coolers where high humidity is held to maintain high produce quality—to keep the "crunch" in Safeway's radishes.

There's an Approved Insulation Contractor near you who has been carefully trained in the most effective methods of use and installation of Styrofoam. For his name, and for more information on Styrofoam for low temperature space, write THE DOW CHEMICAL COMPANY, Midland, Michigan, Plastics Sales Dept. 2228BH12.

*Dow's registered trademark for its expanded polystyrene

THE DOW CHEMICAL COMPANY · MIDLAND, MICHIGAN

primer draws paint-vehicle, as well as pigment portion of primer, down into the pores of metal. Therefore, primer is both in and on the surface.

Penetration of remaining tight scale by primer adds longer service life to protective coating system.

Improved properties of primer due to addition of wetting agent are very good adhesion (see test panels in photo above), flexibility and blister resistance.

("Rustmaster" penetrating liquid and primers formulated from it are products of The Glidden Company, 900 Union Commerce Bldg., Cleveland 14, Ohio.)
5964 on Reader Service Slip.

Selecting liquid-loading valves, assemblies

Loading assemblies are widely used in industry wherever large quantities of fluids are loaded or unloaded.

This 2-page bulletin shows how one can easily determine size, materials required, type for range (scissor arm or slide sleeve), and type for balance (spring or counterbalanced).

Full description of shockless, easily adjustable loading valves is given. Assemblies and valves, are illustrated.

(Bulletin JF-49 is available from OPW-Jordan, 6013 Wiehe Road, Cincinnati 13, Ohio.)
5965 on Reader Service Slip.

Plastic-coated plug valves

Uses: To combat corrosion from neutral salt solutions, alkalis, and mild acids. Also an answer to iron contamination in water distillation, demineralization, and de-ionization systems.

Features-Description: Coating greatly improves corrosion resistance of cast iron valve.

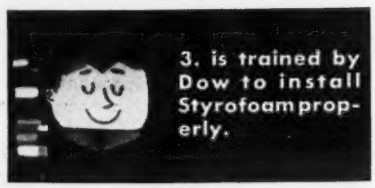
The eccentrically mounted

(*Continued on next page*)

APPROVED STYROFOAM REG. T.M. Registration No. INSULATION CONTRACTOR

SIGN OF AN OUTSTANDING INSULATION CONTRACTOR

Look for this seal when you build cold-storage facilities. It's displayed only by contracting firms with a record of top performance in space insulation. This seal means the contractor . . .



For the names of Approved Styrofoam Insulation Contractors in your area, write to THE DOW CHEMICAL COMPANY, Midland, Michigan, Plastics Sales Dept. 2228BH12.

STYROFOAM®

STYROFOAM is Dow's registered trademark for its expanded polystyrene

DOW

5963 on Reader Service Slip.

She Will Buy The One That's *INSTANT!*

INSTANTIZE YOUR PRODUCT WITH THE BLAW-KNOX INSTANTIZER

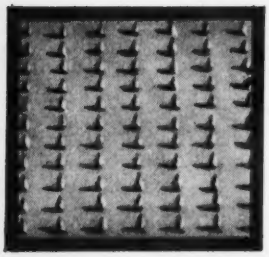
BLAW-KNOX

BLAW-KNOX COMPANY
Dairy Equipment Division
Mora, Minnesota

5966 on Reader Service Slip.

BRAND NEW FROM SIMPLICITY!

3'x 3' MULTI-PURPOSE SCREEN



PRICKING PANEL INCREASES THE RATE OF BRINE OR SWEETENING PENETRATION

The Simplicity "pricking panel," shown at left, is entirely new in the industry; it provides fine mechanical perforations of fruits and vegetables and increases the rate of brine and sweetening penetration. Each and every fruit or vegetable passing over this vibrating panel receives many tiny perforations, thus enabling faster and better penetration of brine or sweetening.

- pricking
- scalping
- sizing
- dewatering
- trash removal
- industrial waste removal

The new Simplicity 3' x 3' Multi-Purpose Screen, with its complete versatility, offers the entire food industry a revolutionary way to cut food processing costs with higher production speeds, a more uniform product and greater flexibility for multi-purpose use. The Multi-Purpose Screen is adaptable to a number of operations and has been used successfully to size, prick, dewater, scalp and remove trash from a number of fruits and vegetables.

The screening section of the Simplicity Multi-Purpose Screen can be equipped with screen cloth of any specification and can be easily replaced with the new pricking panel. The machine itself can be constructed of mild or stainless steel and stainless steel wire cloth is normally used.

Simplicity offers expert counsel for food screening problems based on unequalled experience in screen applications. For more information on Simplicity food screening equipment, write Department 7, Simplicity Engineering Company, Durand, Michigan.

Simplicity
TRADE MARK REGISTERED

ENGINEERING COMPANY • DURAND 6, MICHIGAN

SALES REPRESENTATIVES IN ALL PARTS OF THE U.S.A.

FOR CANADA: Simplicity Materials Handling Limited, Guelph, Ontario.

FOR EXPORT: Brown & Sites, 50 Church Street, New York 17, N. Y.

5967 on Reader Service Slip.

(*Continued from preceding page*)

plug valve touches the valve body only when the valve is closed. Plug friction is completely eliminated.

("DeZurik Eccentric Valves" are a product of the DeZurik Corporation, Sartell, Minn.)
5968 on Reader Service Slip.

Corrosion-proof cements

Twelve-page bulletin presents a broad coverage of mortar-cement in corrosive environments. It is classified according to exposure; both as to type of chemical and its temperature.

Literature contains a large chart showing resistance characteristics of various cements against different chemicals.

Brick-and-mortar construction details, and application photographs are included.

("Corrosion-Proof Cements," Bulletin 5-2, is available from the Atlas Mineral Products Company, Mertztown, Pa.)
5969 on Reader Service Slip.

Dispersing agent—key to iron armour for floors

Specially processed, size-graded iron particles are combined with cement-dispersing agent. When mixture is properly applied to low water-cement ratio concrete, it produces a floor that is ductile yet has high compressive strength.

Other desirable floor features such as non-dusting, non-slipping, wear and corrosion resistance are presented in 24-page bulletin.

Photos, diagrams and detailed explanations cover method of installation and actual facilities where floors are now in service.

("Masterplate Concrete Floor," Bulletin MP-4d, may be obtained by writing The Master Builders Company, 2097 Columbus Road, Cleveland 3, Ohio.)
5970 on Reader Service Slip.

Timing drives without gears

Mechanical-power transmission through use of timing belts results in versatility in application, load range and speed range.

Timing belts combine advantages of belt-drives with those of chain and gear drives without metal to metal contact, lubrication, slip or stretch.

This drive, with emphasis on belt constructed with steel-cable cords imbedded in neoprene, is subject of 4-page catalog.

(Copies of "Time-Tex Drive," Catalog No. 20B8760, are available from Allis-Chalmers Manufacturing Company, Milwaukee 1, Wis.)
5971 on Reader Service Slip.

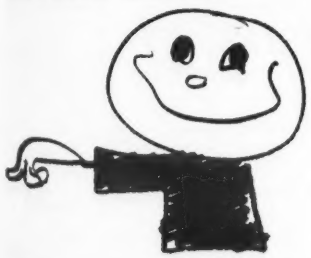
Proper selection of roller bearings

Catalog, 36 pp, covers complete line of bearings. It is compiled specifically to offer assistance in proper selection of bearing equipment.

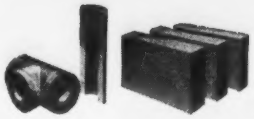
Literature contains information on design, specifications, lubrication, seals and installation.

(Copies of "Roller Bearings," Catalog 59A, may be obtained by writing to Chain Belt Company, Sales Promotion Department, Milwaukee 1, Wisconsin.)
5972 on Reader Service Slip.

VOTE FOR YOUR FAVORITE CARTOON



See this month's "FP Hall of Fame Cartoon" on page 108, and then vote for large reproduction of your favorite on the Reader Service Slip.



FOAMGLAS® INSULATION / waterproof, vapor-proof, strong, can't burn, acid-proof, vermin-proof, dimensionally stable

"Here's how **FOAMGLAS®** insulation helped us build a bigger warehouse for $50,000 less"

—H. J. Goelzer, Vice President, Plymouth Cold Storage

FOAMGLAS served as structural wall component to help get this storage operation started 3 months ahead of normal building schedule.

H. J. Goelzer shows how FOAMGLAS doubles as insulation and structural wall for Plymouth Cold Storage.

Plymouth Cold Storage Company saved 3 months time and $50,000 building a new 6-million pound cheese warehouse—largely on the strength of FOAMGLAS roof and wall insulation. Vice President H. J. Goelzer tells how:

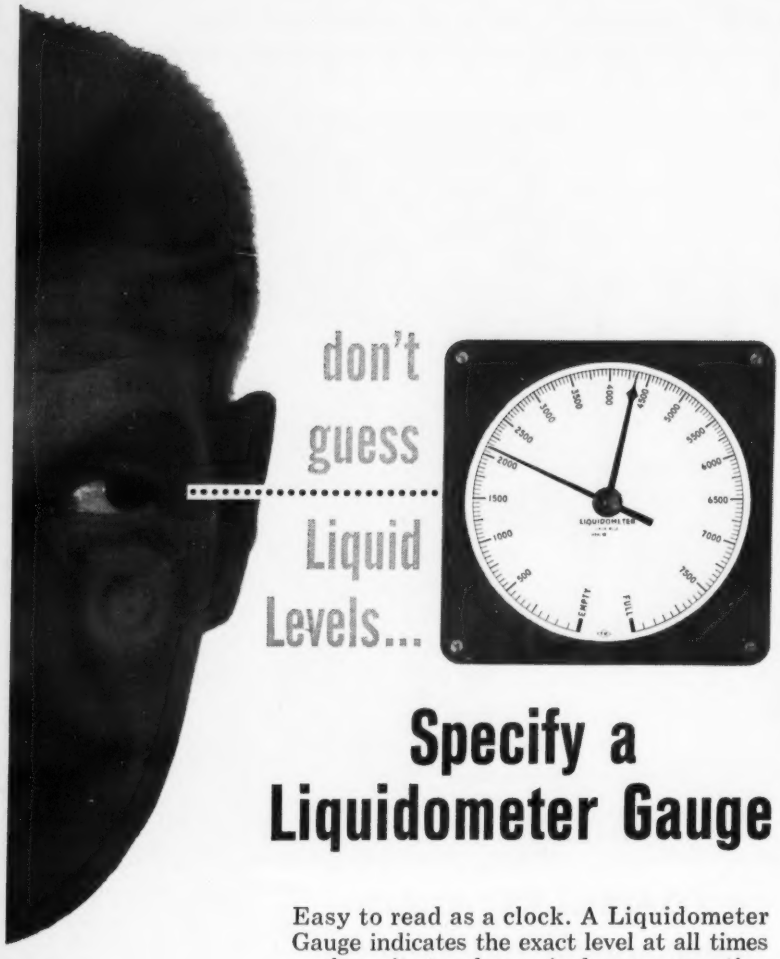
"Conventional construction would have given us a new 5-million pound capacity warehouse in 6 months time at a cost of $125,000. But we found a new type of warehouse construction that halved building time and gave us an extra million pounds capacity for a total cost of only $75,000. The secret was a prefabricated Butler Building frame plus FOAMGLAS to double as insulation and structural material in roof and walls.

"Nothing but FOAMGLAS could have done this job for us. Its great compressive strength, incombustibility and absolute dimensional stability made it an ideal structural component. And since FOAMGLAS is moisture-proof, it insures constant insulating value for the life of our warehouse. FOAMGLAS even gave us vapor-tight construction without a separate vapor barrier. It's vermin-proof, too—important in a cheese warehouse."

This is just one of many ways FOAMGLAS insulation can make food processing and storage facilities function better, cost less, last longer. Our Low Temperature Insulation brochure contains complete data. Write Pittsburgh Corning Corp., Dept. FP-129, One Gateway Center, Pittsburgh 22, Pa. In Canada: 3333 Cavendish Blvd., Montreal, Quebec.

PITTSBURGH PC CORNING

5973 on Reader Service Slip.



Specify a Liquidometer Gauge

Easy to read as a clock. A Liquidometer Gauge indicates the exact level at all times ... shows it at a glance. And gauge operation is completely automatic—as far as 250 feet from the tank—without need for auxiliary power of any kind.

A Liquidometer Tank Gauge measures virtually any liquid. It's simple to install—requires no maintenance. Many have provided over 30 years of efficient, dependable service. All are approved by Underwriters' Laboratories and Factory Mutual.

Whether your gauging needs require an automatic Liquidometer Gauge, a hydrostatic Levelometer or a tank-site-indicating Direct Reader, you'll get the best by specifying Liquidometer. For complete details write Dept. G.

Since 1920 ...of proven quality

THE LIQUIDOMETER CORP.

LONG ISLAND CITY 1, NEW YORK

5974 on Reader Service Slip.

Flexible, light-weight freezer clothes

Only ¼ in. of urethane foam in garments retains body warmth

Uses: Clothes are designed for workers and supervisors working in coolers and freezers in the frozen-food, ice cream and meat industries.

Features: Quilted garments retain warmth of body without being bulky or restricting movements of the wearer.

Foam-insulated garments protect wearer to 30 below zero

Because of inert chemical properties of the foam, frequent laundering or dry cleaning is practical. They can be washed and drip-dried.

Description: For insulation, ¼ in. urethane foam is sewed or quilted into garments.

Clothes have good tensile strength and resistance to wear. They are completely immune to mold, mildew and vermin, and therefore are particularly suitable for use where sanitary conditions are important.

Clothes available are coveralls, 2-piece suits, coats, rubber and leather shoes, foot liners, gloves and headwear of various sorts.

(Urethane foam is a product of Allied Chemical Corporation, National Aniline Division, 40 Rector St., New York 6, New York.)

5975 on Reader Service Slip.

New Techniques In Equipment Cleaning:

KLENZADE SANITATION PROGRAMS

HC-8 CHLORINATED
Alkaline Detergent
Designed for heavy duty soil removal on all food processing equipment. Converts heat-hardened solids into more soluble form through chemical reaction. Chlorinated for improved detergency. Exceptionally effective on animal or vegetable fats.

FLASH-KLENZ
Organic Acid Detergent
Neutralizes and dissolves baked-on deposits. Excellent for de-liming and penetrating mineral-bonded soils. Keeps equipment film-free and restores original lustre of surfaces. Non-corrosive. Extra efficient in problem water areas. For alternate use with Flash-Kleen.

KLENZADE XY-12
Sodium Hypochlorite Sanitizer
Powerful bactericidal action, yet safe for all food handling equipment. Backed by over 25 years of popularity in food operations. Clear liquid easy to mix in use dilution. Leaves no sediment or residue. Stable; excellent keeping quality; high strength.

Ask About Our Sanitation Surveys

KLENZADE PRODUCTS, INC.

Systematized Sanitation All Over the Nation

BELOIT, WISCONSIN

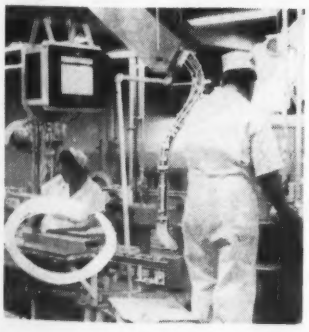
5976 on Reader Service Slip.

Operator can note filling trends on strip chart above filler

Sharpens fill accuracy Smooths deviations Ups yield

With electronic statistical quality control, operator makes immediate filler adjustments as six-can weight averages unroll on chart

R. K. PEDERSEN, Production Manager
MAX LOEWE, Laboratory Director
Star-Kist Foods, Inc.
as reported by **KARL ROBE**



Compact electronic weigher, shown in circle, may be removed from line for clean up at end of shift

Problem: Statistical quality control has been largely an intermittent, manually recorded function in canneries.

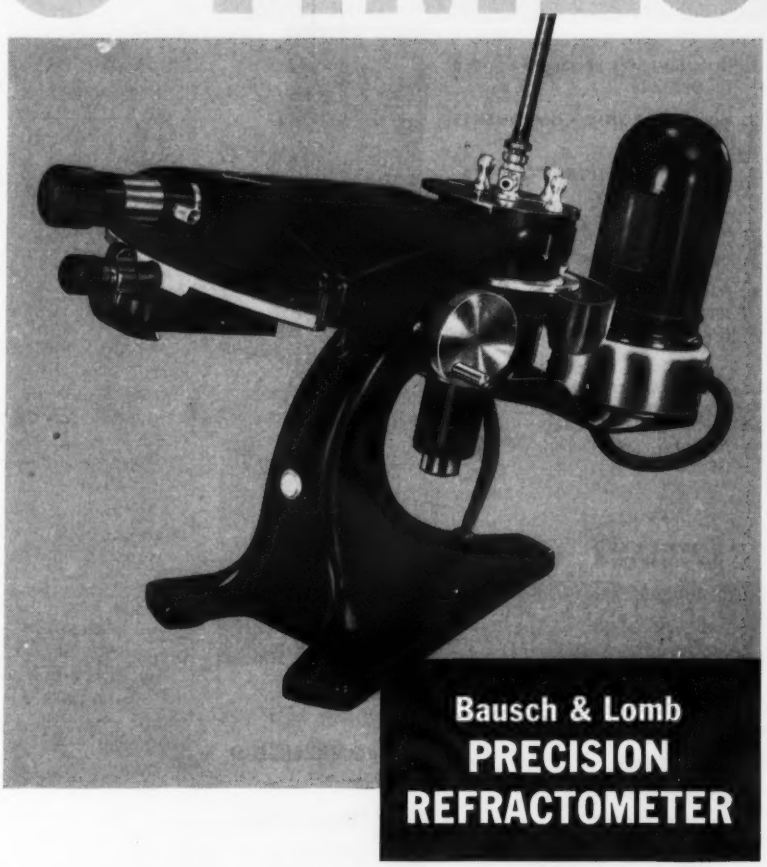
Quality control girls formerly charted 15-minute weighings on each line, and supervisors would check periodically to see that proper weights were maintained.

If weight trends were out of line, then supervisors would inform filling machine operators.

Star-Kist Foods, Inc., Terminal Island, Calif., desired

(Continued on next page)

3 TIMES
MORE ACCURATE



Bausch & Lomb
PRECISION
REFRACTOMETER

Read accurately to .00003 with the Bausch & Lomb Precision Refractometer—three times the accuracy of standard Abbe instruments! This means dollars and cents savings to you in any quality control operation requiring precision grading.

Test transparent and opaque samples by transmitted or reflected light. $1.20n_D$-$1.70n_D$ range with two quickly interchangeable prisms.

And . . . you get fast, accurate readings year after year because parts are compensated against wear. (Test prisms, available for instrument check, certified by U.S. Bureau of Standards.)

See for yourself! Mail coupon for information and free demonstration of today's most complete line of refractometers.

BAUSCH & LOMB
SINCE 1853

BAUSCH & LOMB OPTICAL CO.,
60648 Bausch St., Rochester 2, N. Y.
Send me complete data on the following B&L Refractometers:
☐ Precision ☐ Industrial ☐ Hand
☐ Abbe-3L ☐ Butyro ☐ Juice
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5977 on Reader Service Slip.

TEST MOISTURE

in Granular, Fibrous or Semi-Liquid Materials with a DIRECT Method

1. NO CHEMICALS REQUIRED—SIMPLE TO OPERATE.
2. NO ELECTRONIC COMPONENTS INVOLVED.
3. NO MATHEMATICAL COMPUTATION NECESSARY.
4. QUICK, POSITIVE ACCURACY.
5. USE IN PLANT OR LABORATORY.
6. EQUIPMENT CAN BE UNPACKED, SET UP AND IN OPERATION IN LESS THAN TEN MINUTES.

Thousands of DIETERT-DETROIT Moisture Tellers are in daily use in the textile, chemical, foundry, dairy, cement, salt, and coal industries.

DIETERT DETROIT *30 years experience in moisture testing*

HARRY W. DIETERT CO.
9330 Roselawn Ave. • Detroit 4, Michigan

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ELECTRONICS-TIME *Lumenite* AUTOMATIC CONTROLS

- *ELECTRONIC LIQUID LEVEL*
- *INDUSTRIAL TIMERS*
- *TIME SWITCHES*
- *MAGNETIC SWITCHES*
- *ELECTRONIC SWITCHES*

Your business is of first importance, therefore, all LUMENITE manufacturing and engineering are devoted to the sole production of Controls. In the following list of Bulletins there is a Control best suited to your operation in a money making and saving way.

For complete information and prices check ☑ the Bulletins you want. We'll send them without obligation. Tear out the ad and use it for your requests.

The Bulletins are technically informative; with load capacities, installation diagrams, etc.

- ☐ TIME SWITCHES
- ☐ PROGRAM CLOCKS
- ☐ CYCLE REPEATERS
- ☐ TIME DELAY RELAY
- ☐ AUTO-LAWN SPRINKLERS
- ☐ LIQUID LEVEL
- ☐ MILK LEVEL
- ☐ NONCONDUCTIVE LIQUID
- ☐ AUTOMATIC RESET
- ☐ ICE THICKNESS
- ☐ BOILER LEVEL
- ☐ MOTORIZED SANITARY VALVES
- ☐ INTERVAL TIMERS
- ☐ PHOTO-ELECTRONIC RELAYS-COUNTERS, ETC.

All LUMENITE products have a responsible guarantee

LUMENITE ELECTRONIC CO.
ENGINEERS • DESIGNERS • MANUFACTURERS
407 South Dearborn Street Chicago 5, Illinois

5979 on Reader Service Slip.

(*Continued from preceding page*)

to eliminate this inherent lag between cause and correction.

Solution: Statistical quality control at Starkist started as a research tool. Next step was to send Gary Brenner, food technologist, to National Canners Association three-day statistical quality control school.

This refresher course, given on a practical level, consists of lectures by industry experts, text study, use of NCA-prepared outlines and solutions of model problems.

Next phase was to set weight limits in the plant. Chunk-style tuna, Starkist's biggest volume item, offered most opportunity for control since it is most affected by operator judgment on the filling machine.

Standard x-bar-R ("x-bar" stands for averages, "R" for range) charts were introduced. Then, working with a nearby electronics company, an electronic weigher was built to Starkist requirements for filled can averaging.

Cans pass over nylon tracks on weighing element at rate of 250 cans per minute. Can speed has very little effect on operation of weighing device, so that much higher speeds are feasible.

Cans are weighed in units of six, with a continuous weighing being made as one can leaves and another enters the weighing track. Continuous weighing signal is transmitted to a strip-chart recorder placed in direct operator view above the line. (See photo on previous page.)

Individual weights are not recorded . . . only six-can averages. Peaks of the tracing line establish range or variability. A "warning line", corresponding to second standard deviation from target weight, is marked on chart to right or left of target line.

A deviation of 0.01 ounce can be detected on the 11-inch chart. Each full scale deviation corresponds to plus or minus 0.5 ounce of desired fill.

Red lights above each line indicate over- or under-weight periods to supervisors so that immediate attention

Cook-Chex takes the last trace of guesswork out of production control.

1. Eliminate wrong cook schedules.
2. Keep retort baskets in sequence.
3. Guard against "by-passing" retorts.
4. Provide low-cost permanent records for your cooking-plant.

Cook-Chex is the chemically impregnated retort tag that changes from purple to green *only* after your run has been properly and completely retort processed. Hang a Cook-Chex on each basket before retorting — inspect it after withdrawing. You have the full "protection" record at a glance. It's that easy — that sure.

Used by *all* major packers. Approved and recommended by cannery inspectors. Ask *them!*

Send for Free samples.

ASEPTIC-THERMO INDICATOR CO.
Dept. FP-12, 11471 Vanowen St. • No. Hollywood, Calif.

5980 on Reader Service Slip.

need more information . . .

Note there is a key number at the end of editorial articles or advertisements. To request more information circle the proper number on the convenient form opposite the last page. Send the form to us . . . we do the rest. Information comes direct to you. No obligation, of course.

can be given where needed.

Results: Fill weight control is no longer a mysterious unknown to the key man on the line, the filler operators. He watches the wavering line on the strip chart and, as the line trends to the right, indicating overfilling, he makes immediate adjustment.

Deviations appear on the chart for immediate adjustment. Fill weight deviations become a matter of record, telling management what is being done right or wrong on each line, and transmitting faults in time for correction.

A chart analyzer, an added refinement to electronic weighers, gives supervisors length of run per each lot, amount of machine downtime, and length of runs over or under target figures.

By studying the charts for each machine, management gets an insight on comparative operation between filling machines. This can indicate lack of proper training of operator, permitting corrective measures to be taken. Intermittent manual weighings did not show up this type of information.

Even without increased yield which results, Starkist management agrees that the money spent on statistical quality control is a good investment. Even more important than increased yield is the more uniform fill and closer control which it allows.

(Continuous can-weight averaging system is product of Devices Unlimited, Inc., 1209 E. El Segundo Blvd., El Segundo, Calif.)
5981 on Reader Service Slip.

Senses, remotely limits position, weight, level, pressure

Uses-Features: Electronic limit switch senses and remotely limits position, weight, level or pressure. It is designed for applications where one or more trip points must be frequently reset as in se-

(*Continued on next page*)

No milk contamination from oil leakage

Master Farm Milk Tank Gearmotors will never leak, they contain no oil. Gears made of super tough, non-metallic Maston are self lubricating. All bearings are pregreased and sealed for the life of the gearmotor. There is no oil in the gear case or bearings to drip into the tank and cause contamination.

For all around trouble-free operation and cleanliness, specify Master milk tank agitator gearmotors.

Fits all size tanks, 30, 33, or 36 rpm. shaft speed, 115 or 230 volts, 60 cycle single phase. Two-speed gearmotors also available.

Product of Master Electric Division of Reliance Electric and Engineering Company, manufacturers of a-c. motors, Master Gearmotors, Reeves Drives, V★S Drives, Super "T" D-c. Motors, generators, controls and engineered drive systems. E-1610

RELIANCE ELECTRIC AND ENGINEERING CO.
DEPT. 6712A, CLEVELAND 17, OHIO
CANADIAN DIVISION: TORONTO, ONTARIO
Sales Offices and Distributors in Principal Cities

MASTER R REEVES

5982 on Reader Service Slip.

(*Continued from preceding page*)

quencing and programming.

Typical applications might include the presetting of adjustable limits on valves, gates or liquid level sensors. Electronic limit switch might also be used to preset limits on cutoff devices, or for pressure control systems using resistance type transducers.

Limits are quickly set to accuracies of 1/5 of 1% of full scale for standard units, or to one part in 250,000 for special high accuracy systems.

Description: Two components make up system — a setter and the sensor. One or more limit points are set in on individual dials or counters of the setter.

Each dial or counter sets a precision potentiometer or resistor which serves in one leg of a bridge circuit. Sensor varies a resistance in other leg of bridge circuit. Sensor is usually a matching potentiometer, but may be any resistance varying transducer.

Setter circuit consists of a transistorized bridge-amplifier, mounted on a printed circuit board and enclosed in a drawn steel cabinet with gasketed cast aluminum cover.

In typical application, sensor is a precision potentiometer coupled to the pointer spindle of a scale in a batch weighing system. One dial sets desired weight and another the approach weight. When pointer reaches approach weight, a relay closes to reduce feed rate. When desired weight is reached, a second relay stops feed completely.

(Electronic limit switch is a development of The Jordan Co., Inc., 3235 W. Hampton Ave., Milwaukee 9, Wis.)
5984 on Reader Service Slip.

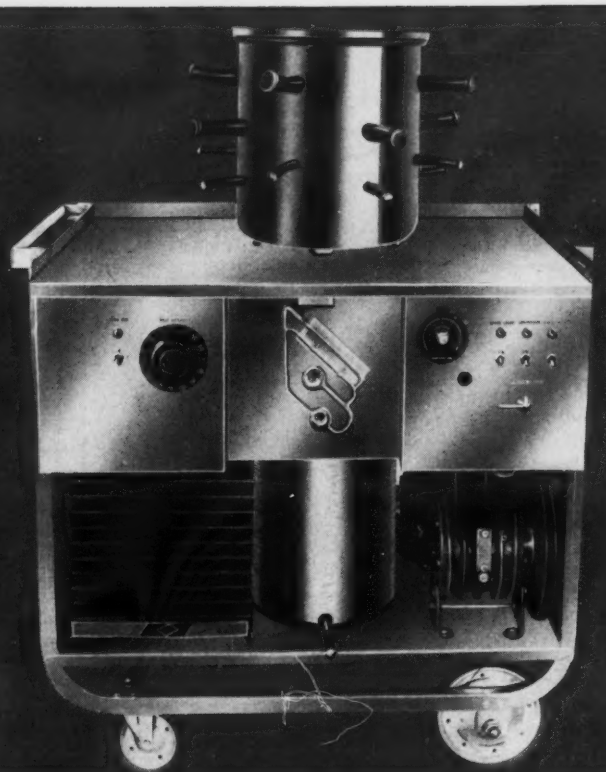
Three controls measure level of bulk materials

Uses: Three styles of bin level controls automatically control level of bulk materials in bins. Three controls include normal duty, explosion-proof and heavy duty.

Normal duty is used for

VirTis
Freeze-Drying

✓ preservation
✓ dehydration
of heat-sensitive
substances



Mechanically Refrigerated Freeze-Mobile

Why freeze-drying?

Samples are frozen solid then subjected to high vacuum. When heat is applied under these conditions, moisture is gradually removed by sublimation, resulting in a dry, porous sample which can be reconstituted by adding water. Sample can be preserved indefinitely when sealed under vacuum or inert gas.

There is a VirTis Unit for every need, ranging from a micro unit with 600-ml capacity to the mechanical system shown here. Write to S/P for complete details and the new VirTis catalog.

Compact, portable freeze-drying in your own laboratory!

APPLICATIONS:

- **Biological Research**—safe dehydration of hormones, vitamins, enzymes, bacteria and virus.
- **Organic Research**—purification of low vapor pressure solvents.
- **Pharmaceutical**—product preservation and dehydration.
- **Food Industry**—preservation of flavor and quality.
- **Hospital**—preserving bones, arteries, skin, etc.

This is a *complete* self-contained, all purpose unit with infrared heaters, condenser, vacuum drum, pump and gauge, and mechanically refrigerated unit. Automatically refrigerated as low as—60°C. Uniformly controlled radiant heating for fastest drying. A variety of flasks are available for manifold drying.

No. 69126—VirTis Mechanically Refrigerated Freeze-Mobile **$2,575.00**

S/P

Scientific Products

DIVISION OF AMERICAN HOSPITAL SUPPLY CORPORATION
GENERAL OFFICES—1210 LEON PLACE, EVANSTON, ILLINOIS
Regional Offices: Atlanta • Boston • Chicago • Columbus • Dallas • Kansas City • Los Angeles
Minneapolis • New York • San Francisco • Washington

5983 on Reader Service Slip.

light to medium weight granular material. Explosion-proof unit is applied to hazardous locations. Heavy duty style is used for heavier, lumpy materials.

Features: Controls eliminate need for constant attention of an operator and automatically prevent wasteful overflow or empty bins. In the case of an enclosed conveyor and bin, controls are valuable in preventing choking and actual damage to conveyors and elevators.

Description: Each of the three controls is a self-contained unit with a pendant float which operates a sensitive enclosed switch. Units are mounted in bins or tanks. As material level rises or falls, unit will stop or start feed conveyors or elevators.

Controls can be installed to operate warning lights or horns. Automatic control or signals systems can be arranged by installing one or more of the level controls near the top, bottom or at various levels in a bin or tank in which bulk materials are stored.

(Three styles of "Tellevel" Bin Controls were developed by Stephens-Adamson Mfg. Co., Ridgeway Ave., Aurora, Illinois.)

5985 on Reader Service Slip.

Simplifies flow readout and control

Transforms pneumatic input signal into a linear signal

Typical flow measurement results in non-linear signal. Such a signal is difficult to use in controlling equipment which requires a linearized actuating signal.

An instrument has been developed for converting output into a linear signal to simplify flow readout and control. Unit utilizes a 3 to 15 psi input signal from a transmitter and produces a high capacity linearized 3 to 15 psi output signal

(*Continued on next page*)

Rodney Hunt Turba-Film Processor, installed at California Packing Corp., San Leandro, Calif., processes pears and apricots at a rate of 5 tons an hour. Foxboro instrumentation precisely controls steam jacket pressure and absolute pressure — makes certain quality and flavor of concentrate will not be damaged by overheating.

Behind the Del Monte quality label

FOXBORO AUTOMATIC EVAPORATOR CONTROL

Five tons of fruit an hour — that's the rate at which California Packing Corp. runs its Turba-Film processor during peak season. And Foxboro Automatic Evaporator Control helps make sure every last spoonful of production lives up to the Del Monte reputation of quality in food products.

Crucial point in many food processing operations comes at the evaporation stage. Too much heat; too high a steam pressure; too slow a product flow; too dense a concentrate — and quality and flavor may be seriously impaired. Foxboro instrumentation integrates and controls all these functions — provides the high degree of accuracy and sensitivity needed for the most efficient operation of processing equipment.

Faster operation and better product quality are just a few of the benefits gained when a food process is equipped with Foxboro Automatic Control. Have your Foxboro Field Engineer survey your process with improved instrumentation in mind. Your product may be the winner for it. The Foxboro Company, 9212 Neponset Ave., Foxboro, Mass.

FOXBORO
REG. U.S. PAT. OFF.

INSTRUMENTATION FOR THE FOOD INDUSTRY

5986 on Reader Service Slip.

Clarity control is almost this easy with DICALITE Filteraids

FIRST REASON is, of course, that Dicalite supplies the greatest variety of filteraids to handle practically every type of fluid . . . a complete family of top-quality diatomite filteraids of different performance characteristics, plus Nerofil carbon-based filteraids and other special filteraids developed and processed for particular applications.

SECOND REASON is that Dicalite makes expert technical service freely available to help you match a Dicalite Filteraid to your particular problem, so that you'll get maximum production joined with greatest economy.

THIRD REASON is the ability of Dicalite Filteraids to handle the all-too-common variations in the filterability of process liquors – usually by the simple method of varying the filteraid dosage to meet the requirements of the 'tough' run. This is one of the criteria of a quality filteraid . . . and Dicalite Filteraids, all of them, are recognized as being without a superior.

Dependable GLC GREAT LAKES Dicalite® FILTERAIDS

. . . give you critical control of clarity

DICALITE DEPARTMENT, GREAT LAKES CARBON CORPORATION • 612 S. FLOWER ST., LOS ANGELES 17, CALIF.

5987 on Reader Service Slip.

(*Continued from preceding page*)

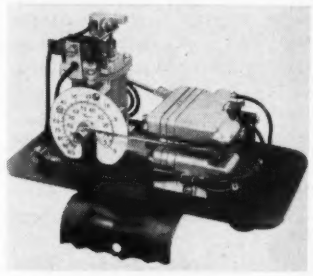
to a receiver and/or controller.

Principal application is with flow meters based on differential pressure.

A typical food application might be with a flow meter used to control the rate of discharge from a pump requiring a linearized actuating signal.

It also has application with cascade control systems involving flow and a linear variable measurement such as temperature, pressure or liquid level. It may be used in totalizing several measured variables such as temperature and flow. (For this purpose, all signals must be linear.)

The fact that the instrument permits standardization on linear scale for all measurements offers several advantages. A wider range of linear charts is available than any other type. It also saves time and effort required for



View of instrument with cover removed. Instrument has been field tested for Navy Department and private industry. Majority of those tested are now on regular production runs

manual computation and conversion of flow figures. And, by presenting flow signal information on linear scales and charts, it aids in readability.

It has interchangeable cams which perform an unlimited variety of functions other than linearization of flow measurement.

Unit is housed in a dustproof case. It requires no electrical input. These features make it explosion-proof for safe use in hazardous areas.

(Instrument for simplified flow readout and control is a development of Taylor Instrument Companies, 95 Ames St., Rochester 1, New York.)

5988 on Reader Service Slip.

Chelating agent to inactivate trace metals in foods provides

Simpler way to stabilize color, clarity, flavor

Under study by the FDA is the application by the Dow Chemical Company for the use of Versene CA as a chelating agent in foods to inactivate trace metals having adverse effect upon color, clarity, stability, etc.

When approved, it will provide processors with a means to inactivate undesirable metal ions in one operation.

Laboratory tests and limited field tests have demonstrated the value of Versene CA in numerous food applications.

It has found value for controlling iron and other metal contaminants in carbonated beverages, to maintain the sparkle of the beverage; in canned fruit juices, to retard development of off-flavors and loss of ascorbic acid catalyzed by trace metals; in beer, to control trace variables in water supply and retard "gushing"; and in wine, to aid in clarification and prevent haze formation during storage.

For edible fat and vegetable oil processing, it has been found useful as a synergist, with an antioxidant, to stabilize carotene and ascorbic acid and to inactivate trace metals such as nickel, iron and copper, which may catalyze fatty acid oxidation.

It has also found application in fish and meat processing to aid in stabilizing pre-cooked meats, increase shelf-life of fish and prevent struvite formations in sea foods.

Laboratory tests with Versene CA have also indicated miscellaneous food applications in washing eggs, preventing off-flavors due to heavy metals, improving viscosity of whipping cream and ice cream, increasing recipe tolerances of dry mixes, stabilizing certain food colorings and processing dough prior to baking.

Versene CA (disodium salt of the calcium chelate of ethylene diamine tetra acetic acid, dihydrate) is a white, drum-dried, flake material, available in sample quantities for laboratory investigation. Larger quantities can be supplied upon request.

Any level of use in foods cannot be recommended until regulation is published by FDA. For experimental purposes, however, it is suggested, based upon presently available information — that Versene CA be evaluated at levels of 25 to 100 ppm. This should be effective in inactivating most trace metal contaminants which are found in foods.

Exact amount required, of course, is dependent upon concentration of trace metal contaminants.

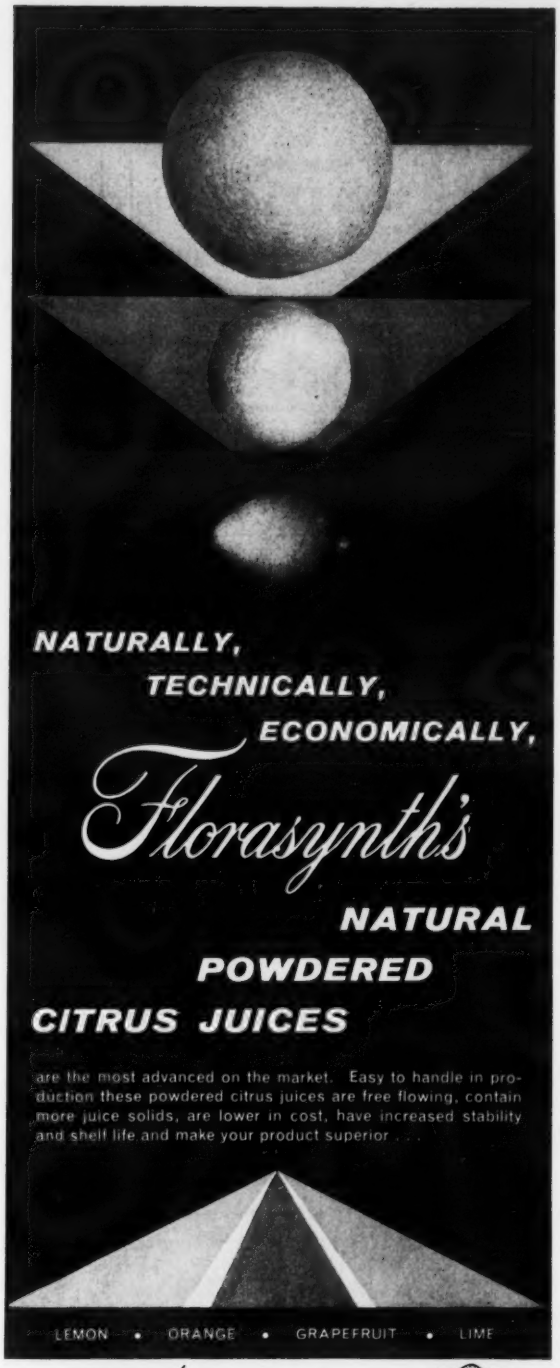
(Complete specifications may be obtained from The Dow Chemical Company, Technical Service Dept., Midland, Mich.)

5989 on Reader Service Slip.

Metal Binding Capacity

Metal	Effective pH Range*	Amount of Versene CA Required to Inactivate** (weight/unit weight)
Iron	below pH 9.0	7.30
Copper	up to pH 12.5	6.40
Nickel	up to pH 13.7	6.95
Lead	up to pH 12.1	1.97
Zinc	up to pH 12.9	6.25
Cobalt	up to pH 13.4	6.90
Manganese	up to pH 12.4	7.40

*Based upon ideal solution studies
**Theoretical minimums


NATURALLY,
TECHNICALLY,
ECONOMICALLY,
Florasynth's
NATURAL
POWDERED
CITRUS JUICES
are the most advanced on the market. Easy to handle in production these powdered citrus juices are free flowing, contain more juice solids, are lower in cost, have increased stability and shelf life and make your product superior . . .
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Florasynth Labs. (Canada Ltd.) Montreal • Toronto • Vancouver • Winnipeg
Agts. & Dist. in Mexico: Drogueria & Farmacia Mex. S. A., Mexico 1, D. F.
SALES OFFICES IN PRINCIPAL FOREIGN COUNTRIES

5990 on Reader Service Slip.

A complementary additive to vanilla flavors...

Baked products faithfully retain their vanilla odor, taste and flavor strength when Givaudan's C. R. #8 is used as a fixative. Its resistance to high as well as low temperatures has been *proved in actual use* by the baking, candy and ice-cream industries. C. R. #8 is soluble in alcohol and propylene glycol. C. R. #12 —a variation of C. R. #8—is also soluble in vegetable oil. Both are coumarin-free.

C. R. #8 is only one of Givaudan's *proved-in-use* products. You can rely on Givaudan for custom-made or standard flavors that *always* meet your requirements. Samples and literature on request.

Givaudan Flavors Inc.

321 West 44th Street, New York 36, N.Y.

5991 on Reader Service Slip.

Ingredients for the meat industry

Five ingredients for the meat industry are covered in a 20-page technical bulletin. Included are erythorbic acid, sodium erythorbate, ascorbic acid, sodium ascorbate and sodium cyclamate.

Bulletin fully discusses use levels, background of use in meats as well as other foods, specific uses in meat products, and selected future uses.

Also included is a bibliography of selected references on the use of these ingredients in food processing. In an appendix to the bulletin, three separate diagrams show spraying systems for application of products to meats.

("Pfizer Products for the Meat Industry", Technical Bul 100, is available from Chas. Pfizer & Co., Inc., Chemical Sales Division, 630 Flushing Ave., Brooklyn 6, New York.)
5992 on Reader Service Slip.

Evaluates 1959 barley crop

Analysis and evaluation of the 1959 barley crop is available in report form for distribution to all concerned with brewing.

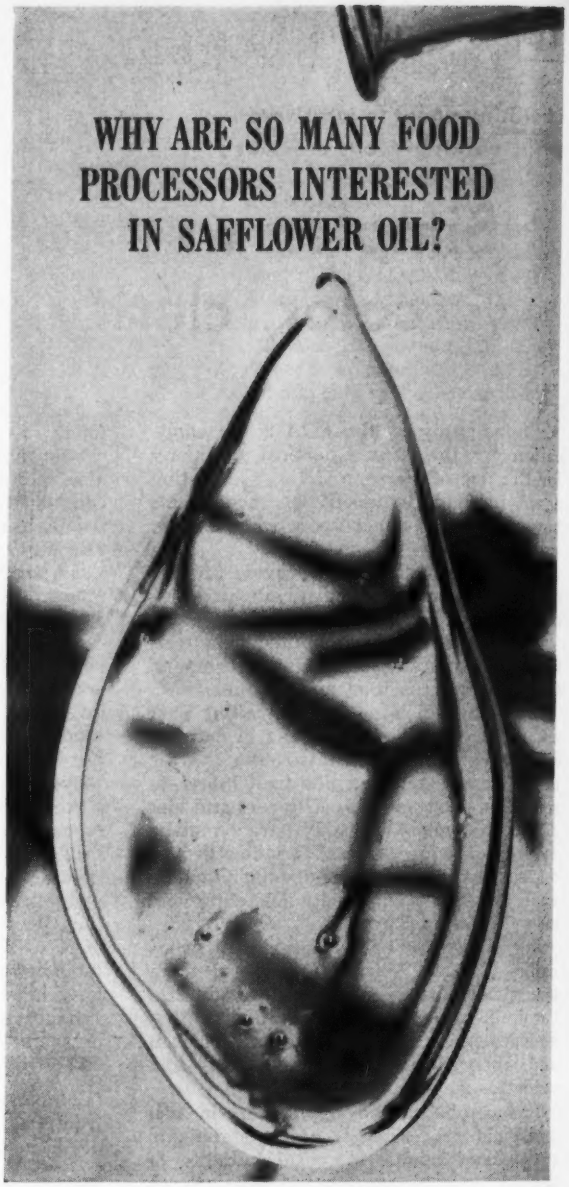
Report states that no major problems with reference to chemical qualities are apparent in barleys reaching the market. A definite downward trend in kernel size, however, appears to be indicated.

Over-all average thin count of the new crop purchases is similar to over-all average of 1959. Final thin count average for year is expected to increase substantially.

A total malting barley crop of 407 million bushels is anticipated. This is 14 per cent below 1958 yield, although it exceeds ten year average by 28 per cent. Cleanout may be significantly higher than recent crops, thus increasing net cost of maltable barley. However, careful selection of lots will tend to overcome some of this disadvantage.

Report advises that Domestic Montcalm barley is not as

WHY ARE SO MANY FOOD PROCESSORS INTERESTED IN SAFFLOWER OIL?



Food processors are turning more and more to the use of Safflower oil. For good reason: Research relates Safflower oil to the reduction of cholesterol in the blood. Safflower oil is over 90% unsaturated. It is over 76% linoleic acid—*containing more essential fatty acids than any other available vegetable oil or shortening.*

Other attributes, such as clear color, non-reverting flavor and complete palatability make Safflower oil one of the most versatile ingredients in the food field. Let this dramatically different ingredient give your product a new point of difference. Write for literature and samples today.

SAFFLOWER OIL
by PVO Process

Pioneered by
PACIFIC VEGETABLE OIL CORP.
Dept. FP2 1145 South Tenth Street · Richmond, California

5993 on Reader Service Slip.

high in extract and low in protein as 1958 crop. Early reports indicate that Canadian Montcalm barley is stained but of excellent quality otherwise.

(1959 barley crop evaluation, as well as November supplement and January supplement yet to come to report significant interim changes, reported by laboratories of Albert Schwill & Company, are available from Albert Schwill & Company, 141 W. Jackson Blvd., Chicago 4, Illinois.)
5994 on Reader Service Slip.

Reduces price of feed supplement for sixth time in six years

A reduction of seven to twelve per cent in the price of Hydan feed supplement, a methionine source for poultry and livestock feeds, has been announced by the Du Pont Company.

New prices for methionine are $1.10 a pound in truckloads and $1.20 a pound in less than truckload quantities. Old prices were $1.25 and $1.29 a pound respectively.

This is the sixth successive price reduction since Du Pont started commercial production of methionine in 1954. The initial price was $3.00 a pound.

Reduction was made possible by major plant and process improvements at the company's Beaumont, Texas works and projected reductions in raw material costs, according to W. James Latimore, director of sales for Du Pont's Biochemicals Division.

Mr. Latimore said Du Pont is continuing large expenditures for research on the utilization of methionine for laying hens, broilers and turkeys. As a result of findings at Du Pont's Stine Laboratory that there is a direct ratio between the energy level of chicken feeds and the requirement of methionine, continuing efforts are under way to increase egg production and reduce feed requirements per

(*Continued on next page*)

Staley Quality Improvement Pointers:

in flavor, body, color, profits...

Sweetose makes the difference! Here's why!

In combination fruit juice drinks, Sweetose blends and enhances the natural flavors and colors of fruits.

In canned fruit sauces, Sweetose holds appetizing natural color. Enhances that just-picked flavor with balanced sweetness.

Sweetose, the original enzyme-converted corn syrup, brings out true fruit flavor . . . gives a brighter, richer, more appetizing appearance that wins sales!

Whether you pack jams and jellies, fruit juice drinks, or fruits and berries, remember this: bland, crystal-clear Sweetose Corn Syrup gives balanced sweetness control—never masks a flavor no matter how delicate.

Strawberries taste like real strawberries, grapes like real grapes, peaches like real peaches, for Sweetose holds natural "fresh-picked" flavor! Captures true fruit colors at their peak. Improves appearance, body and texture in a wide variety of fruit products.

Look into the many advantages of Sweetose today. For more information on how Sweetose can impart customer-winning characteristics to your products at *definitely lower sweetener costs*, see your Staley Representative at the branch office nearest you, or write:

A. E. STALEY MFG. CO., DECATUR, ILLINOIS
Branch Offices: Atlanta • Boston • Chicago • Cleveland
Kansas City • New York • Philadelphia • San Francisco • St. Louis

Sweetose®
THE ORIGINAL ENZYME-CONVERTED CORN SYRUP

5995 on Reader Service Slip.

The case of the thirsty dry milk that took the shrink out of sausage

A sausage maker had a problem: His sausages stayed plump in the package, but they puckered in the pan. They shriveled under heat, became less juicy, less tasty. All because of excessive fat loss.

Could a dry milk solve the problem?

It could. *If* it were a dry milk with an unusually high absorption capacity, if it were an unusually *thirsty* dry milk.

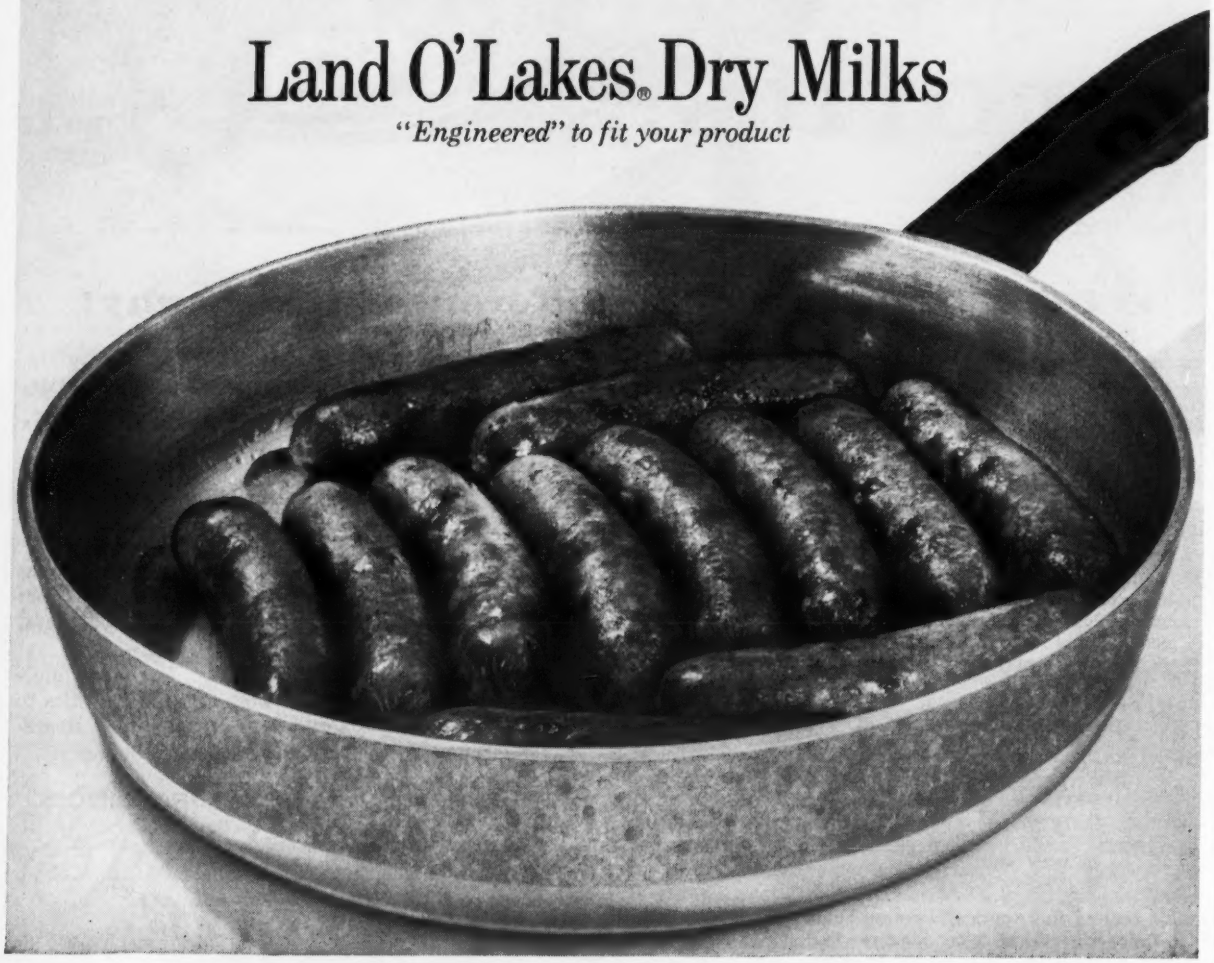
Land O'Lakes put the problem in the hands of its developmental laboratory. And from here emerged a dry milk with the thirst of a sponge in sandy Sahara.

This extra thirsty dry milk drank added fats and *retained* them. Even under frying temperatures! Result: These same sausages now stay plump in the package *and* in the pan. Taste oh, so much better.

You, too, may process a product that can benefit from one or more of our dry milks. If we haven't the precise one you need, we can *create* it. Write us. Land O'Lakes Creameries, Inc., Dept. DM-1, Minneapolis 13, Minnesota.

Land O'Lakes® Dry Milks

"Engineered" to fit your product



5996 on Reader Service Slip.

(*Continued from preceding page*)

pound of meat.

Independent research is proceeding to confirm the findings of the Stine Laboratory as a result of Du Pont grants-in-aid to several state universities.

Artificial sweeteners now approved

FDA has approved use of artificial sweeteners in jams, jellies and preserves.

Included are saccharin, sodium saccharin, calcium saccharin, sodium cyclamate, potassium cyclamate, calcium cyclamate or any combination of these.

To protect persons on sugar restrictions against indirect addition of any significant amount of sugar, amount of dextrose which may be added during processing is limited. The addition of a small amount of dextrose may be necessary where pectin is used during the jelling process.

Products will carry the words "artificially sweetened" prominently displayed on the label as part of the name of the food. Specified optional ingredients, used in particular brands, will also appear on the label.

To ensure that artificially sweetened products have a substantial amount of fruit ingredients, it is required that at least 55 per cent by weight of the finished food be fruit juice or fruit.

Conditioner prevents stickiness, doubles shelf life

Conditioner has application in preventing stickiness in wide variety of foods. It is used to improve chewing quality of all types of foods that have a tendency to stick to teeth.

Many confectioners are now using it in brittles, caramels, chewing candies, hard candies, etc to prevent them from sticking to each other, to wrappers and to fingers. It

they're switching

to Lake States Torula Yeast U.S.P. for an Economical Nutrition boost!

Nutritional Supplements . . . as a component of vitamin-mineral mixtures

Canned Food Mixes . . . protein and lysine source for baby food

Seasoning Blends . . . high protein carrier, bland flavor

Institutional . . . ideal additive to high protein, low sodium or therapeutic diets

Pharmaceuticals . . . compatible, edible, nutritional base

Lysine Supplement . . . in cereals, crackers, cookies, breads, snack items

why? Lake States Torula Yeast is a nutritional concentrate of unusually high quality. It has 50% minimum of protein, containing all of the essential amino acids, and is especially rich in vital lysine. It is also a rich and reliable source of B vitamin factors and essential minerals such as calcium, iron, phosphorus and iodine.

A significant content of completely protected, unsaturated, fatty acids is another Lake States feature. This important nutrient is protected by inclusion stabilization and by a natural anti-oxidant which occurs in sufficient excess to offer protection to other fatty materials in a Torula Yeast containing mix.

Lake States Torula Yeast is bland in flavor and blends well with most products. In many applications it also serves as a flavor enhancer.

Produced from sterile media under vigorous and continuous quality control, Lake States Torula Yeast assures you purity, uniformity, and stability, plus long shelf life. At *low cost*, it provides the enrichment your products need in today's nutrition-minded marketplace.

To obtain complete information and a liberal test sample, write today, stating your application.

Lake States
AMERICA'S PIONEER PRODUCER

Lake States Yeast and Chemical Division of St. Regis Paper Company
RHINELANDER, WISCONSIN
DEPT. FP-12

Sales Office: 420 Lexington Ave., New York 17, N.Y.; or W. Glenn Wunderly Company, 170 E. California St., Pasadena, California; Dillons Chemical Company, Ltd., Montreal and Toronto, Canada

5998 on Reader Service Slip.

is also used to hold salt on mixed nuts, and in ice cream crunches to keep them dry, fresh and crisp in ice cream.

Used as a production aid, it can replace slab oil in candy production, providing a high gloss, non-greasy surface. Since it also serves as a lubricant, it may be used to lubricate cutting knives and other parts of equipment coming in contact with sticky foods.

Conditioner seals out moisture and retains high gloss of confections even under most adverse weather conditions, thus more than doubling shelf life of product.

It may be used as a dusting powder or added directly to cooking batches. It costs less than ½c per pound and, since weight is retained in product, full cost is recovered.

Odorless and tasteless, it is a pure vegetable product in pulverized form.

(Setsquick food and candy conditioner is a product of Henry H. Ottens Mfg. Co., Inc., 129 S. Front St., Philadelphia 6, Pennsylvania.)
5999 on Reader Service Slip.

Dusting starch handled pneumatically

Uses: For bread bakeries' pneumatic dusting systems. Using product in enclosed system, starch is reused, reducing costs by requiring less dusting material.

Features: Starch is especially treated to maintain free flow even under adverse humidity conditions. It is finely pulverized and thoroughly screened for uniform particle size and dependable performance.

Description: Protein-free starch minimizes moisture absorption and sticking of doughs, permits greater pressure on the dough to squeeze out gas pockets. This allows fine texture without surface cracking, yields thinner, tenderer, better-color crusts.

(Sta-Matic starch is produced by the A. E. Staley Manufacturing Company, Decatur, Ill.)
6000 on Reader Service Slip.

Are you using the right antioxidant?

High Schaal oven time and A.O.M. values are important, but . . .

. . . do these indices assure long-time stability of fats through cooking and processing, as well as under normal storage conditions?

Not necessarily. That is why it pays to use Sústane 3, Sústane 3-F or Sústane 5-F.

These formulations contain propyl gallate for high A.O.M. values, but also contain BHA . . . an outstanding antioxidant that gives you additional advantages, including excellent carry-through.

Which of these antioxidants to use is a matter for expert analysis and guidance. Feel free to consult our Food Service Group. Just write our Products Department.

Sústane®

made in 4 forms, 7 formulations . . . keeps lard and shortening fresh.

UOP® UNIVERSAL OIL PRODUCTS COMPANY
30 Algonquin Road, Des Plaines, Illinois, U.S.A.

6001 on Reader Service Slip.

Create More Demand for More Products by

Consumer interest in better nutrition has never been higher than it is today. As a result, products backed by strong nutritional claims are steadily gaining an increased share of every food dollar. You can take advantage of this nutritional boom and gain an edge over competition by fortifying with Merck vitamins and amino acids.

Merck offers nearly a dozen different nutrients, all easily adaptable to normal food processing operations. Consider Merck Ascorbic Acid, for example. It can give you promotable vitamin C claims for any number of products—from gelatin desserts and instant potatoes to fruit juice blends and instant drinks. Merck lysine can improve protein quality of cereals, specialty breads and other processed foods containing vegetable proteins. Vitamins B_{12} and B_6—both pioneered by Merck—are musts for all ages, are loaded with consumer appeal, give you unlimited opportunity for offering shoppers extra nutritional value in your products.

If you have new products in the works, or are looking for ways to stimulate sales of existing products—look first to Merck for the nutritional appeal, nutrients, and technical assistance you need.

For the full story call in your Merck representative now, or write directly to Rahway.

More Shoppers with MERCK NUTRIENTS

New booklet shows how you benefit from Merck's food processing laboratory. Send now for your free copy of "Merck Research for the Food Industry."

MERCK CHEMICAL DIVISION

MERCK & CO., INC. • RAHWAY, NEW JERSEY

© Merck & Co., Inc.

For more information on product at left, circle 6002 see information request blank opposite last page.

Attention cereal makers:

Here's how Tora Food® can give you a new sales-building nutrition story at low cost

If you need a powerful new story to spark the sales of your cereal, Tora Food (Red Star's brand name for Torula Yeast U.S.P.) is your answer. And you can actually *save* money. Here's what we mean:

How will Tora Food improve nutritional content of cereal? Here are some specific nutritional factors housewives know and look for in cereal. This chart shows you how Red Star Tora Food increases these factors in a typical cereal—corn meal.

PER 100 GRAMS OF CORN MEAL

	Corn meal as is	Corn meal plus 3% Tora Food
Protein	9.00 grams	10.50 grams
Vitamin B_1	0.30 milligram	0.66 milligram
Vitamin B_2	0.08 milligram	0.20 milligram
Niacin	1.90 milligrams	2.80 milligrams

What totally will Tora Food add to cereal?
(At a level of 3# to 100#)

Vitamin B_1	163.5 milligrams worth
Vitamin B_2	54.5 milligrams worth
Niacin	408.6 milligrams worth
Vitamin B_6	40.8 milligrams worth
Para-amino benzoic Acid	20.4 milligrams worth
Pantothenic Acid	150.0 milligrams worth
Folic Acid	95.3 milligrams worth
Choline	4.8 grams worth
Inositol	5.4 grams worth
High quality Protein	1.5 lbs.

Here is a nutritional "barrage" that can't help but impress the nutrition-conscious housewife.

How can Tora Food actually save you money? The ingredients listed above would cost you 87.33¢ at current price levels, if you bought them individually. You get these *same* ingredients in the *same* amounts for only 54¢ in Red Star Tora Food. That's 33.33¢ saved. (Incidentally, the same amount of brewer's yeast would cost you between 72¢ and 84¢.)

In addition, Tora Food saves you money on handling and inventories. Instead of buying, storing, handling and keeping books on 10 or more different ingredients, you need handle only *one* when you use Red Star Tora Food.

How else will Tora Food improve saleability of cereal? Tora Food will intensify the flavor of your cereal. It has a mild, pleasant flavor with the ability to enhance the natural flavor of the product to which it is added.

Furthermore, Tora Food is an antioxidant and helps give your cereal longer shelf life.

Who besides cereal makers can use Tora Food? Almost any food processor. Here we've talked specifically about cereal makers, but baby food processors are already using Red Star Tora Food successfully. And here are some other types of processors who can use Tora Food to big advantage: spice, soup, chocolate, peanut butter, sauce and gravy, health food, smoked yeast and pharmaceuticals.

If you are a cereal maker (or *any* food processor) who wants a new sales-boosting nutrition story, write to us. We'll be happy to show and discuss with you work and analysis that has been done. Or if you prefer, we'll be happy to have a nutritionist call on you. Write to the address below.

Nutritional Division

RED STAR YEAST & PRODUCTS CO.

Milwaukee 1, Wisconsin

6003 on Reader Service Slip.

ingredients

Cuts price of saccharin by 20c per pound

A price cut in saccharin of approximately 20c per pound has been announced by Monsanto Chemical Company. Reduction, which applies to all grades, is a cut of more than 10 per cent below previous levels.

Under a new schedule of prices, which is Monsanto's lowest for the product in 16 years, saccharin is quoted at $1.40 to $1.53 per pound in 1000 pound quantities, as compared to a previous price range of $1.50 to $1.63 per pound.

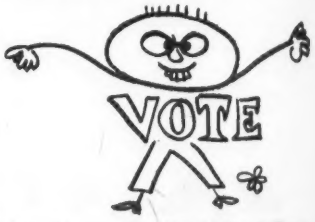
Robert M. Morris, Monsanto vice president and general manager of the company's Organic Chemicals Division, said that reductions were necessary to compete with cheap Japanese imports.

"Monsanto does not intend to be forced out of the American market for its oldest product," he added.

Repeated US tariff reductions on fine chemicals since World War II have brought extreme pressure to bear on US saccharin production, he pointed out. These tariff cuts have prevented prices from attaining levels commensurate with the increased costs of producing the compound in this country, Morris said.

Monsanto was the first US producer of saccharin, used as a non-nutritive sweetener for cooking and table use. It is approximately 400 times sweeter than sugar but contains no calories.

VOTE FOR YOUR FAVORITE CARTOON



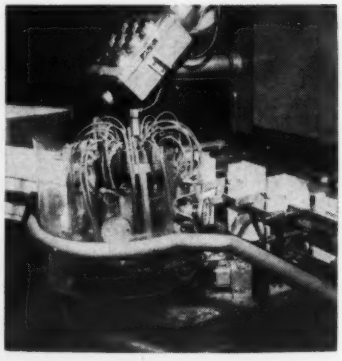
See this month's "FP Hall of Fame Cartoon" on page 108, and then vote for large reproduction of your favorite on the Reader Service Slip.

(Left) Cartons are set up by rotary opener at far left, bottom flaps are tucked and heat-sealed and cartons are filled at high speed before proceeding to top-sealing, top and bottom gluing and compressing. (Above) Wide main flap (arrow) on empty carton at right is folded and hot-glue-sealed over previously tucked and sealed flaps

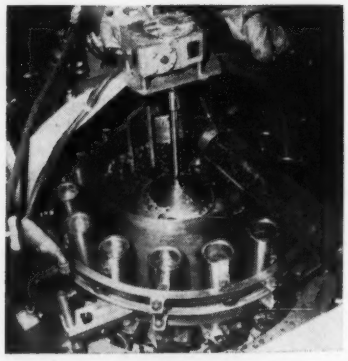
Now used in limited production by Birds Eye for frozen strawberry halves . . .

First Economical Liquid-tight Carton For High-speed Filling, Sealing

- **No overwrap — simple construction with inexpensive materials**
- **Special machine can set up, fill, seal at over 200 per min**



Knocked-down cartons are pulled from feed magazine, opened and placed on conveyor by vacuum-cup device



Stainless steel cylinder in filling hopper cuts volume and reduces crushing. Agitator keeps product mixed

New printed paperboard carton, with built-in polyethylene liner, is described by its developers as "the first economical liquid-tight carton for frozen foods which lends itself to high-speed mechanized filling and sealing."

Already in limited use for frozen strawberry production at Birds Eye Division of General Foods on the West Coast, the package has impressed this processor's packaging men as possessing superior water barrier properties to those of the conventional metal-end fiber canister.

In addition to successfully holding liquid content of the product both before freezing and after defrosting, carton provides greater opening convenience than metal-end canister, stacks better in retail cabinets and provides larger useable surface for package-design elements.

The carton

Birds Eye is marketing carton in two sizes for frozen strawberries — 10 oz and 16 oz. More popular 10-oz carton measures 3½ by 1⅝ by 3½ in., is constructed of 18-pt solid bleached kraft and has an outside wax coating.

Liner, glued into carton by the supplier using a conventional cold adhesive, is wet-strength bleached kraft, coated on inside with a 1¼-mil extrusion coating of low-density polyethylene.

Carton's special design feature, which permits fast, liquid-tight seal, involves a narrow and a wide "main flap" on each end of carton (see

(*Continued on next page*)

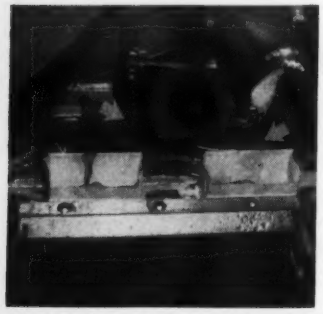
(*Continued from preceding page*)
photo on preceding page).

When longer main flap and short triangular side flaps are folded, the paper liner protrudes and continues to be supported by the short main flap — allowing sealing heat to be applied directly to paper liner on one side without having to pass through carton board.

(The triangular side flaps are tucked in by machine in such a way as to fold the poly-coated paper liner into interlocking position with the flaps.)

The machine

Success of the package is largely result of a new, integrated machine which sets up, fills and seals packages at speeds in excess of 200 packages per min.



After filling step, cartons pass through fog spray (left arrow) which loosens particles on cartons' outer lip. Vacuum nozzle (right arrow) sucks off these product particles that otherwise would impair hermetic seal

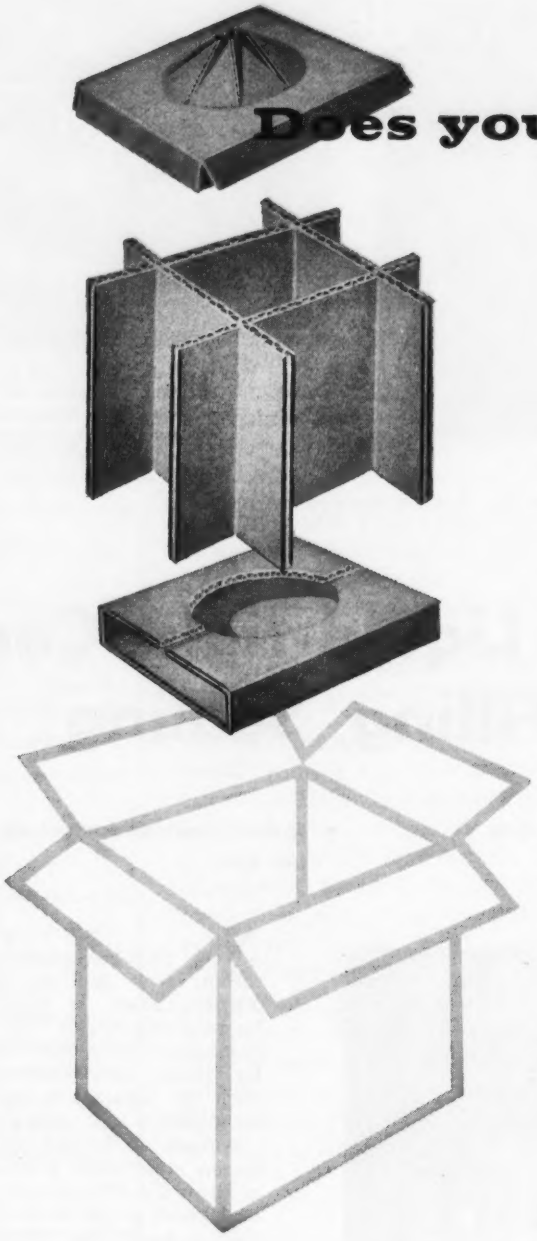
In operation, machine pulls knocked-down cartons from feed magazine, opening them by means of vacuum-cup device. Three of the four bottom flaps and the protruding liner are tucked and heat seal is applied, with the same tuck-and-seal arrangement described above for the top closure.

Carton then passes to a specially modified, 14-pocket filler, after which operation three of the top flaps and paper liner protruding at top are tucked and heat-sealed.

Finally, a hot-melt adhesive is applied to surface of the narrow "main" flaps on top and on bottom of carton, and

What you should know about

Does your corrugated box



For most products, proper interior packing is one of the most important factors in corrugated container design. Through its careful selection you can often prevent a costly chain reaction of damage claims and rejected shipments.

How much and which types to use will depend primarily on your product, its construction, how it is normally handled and shipped as well as the type of protection needed. You may find, for example, that *anchoring* the contents is paramount. Some packing pieces are made expressly for this purpose. Others *cushion* against impact and vibration. Still others are used to *separate* packed units. A fourth groups primary job is to *suspend* the contents within the container.

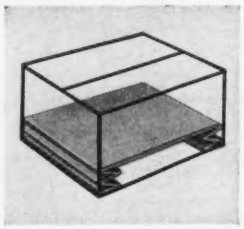
The forms of interior packing are as versatile as the items they protect. A few of the most widely and successfully used types are described here:

SPRING PADS

Like innersprings, these accordion-shaped pads help dissipate and cushion shock. Their buffer action absorbs vibration

interior packing for Union Boxes.

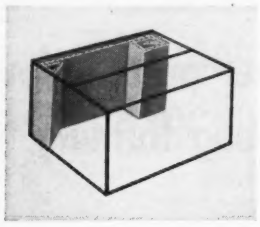
need an "innerspring mattress"?



which can cause loosening of parts and actual breakage — particularly where it coincides with the natural frequency of the packaged product and sets up harmonic resonance.

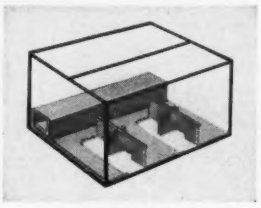
CORNER PIECES

These units "round off" the corners of the box's interior—provide extra protection at these vulnerable points. They cushion against crushing caused by improperstacking and impact resulting from humping or switching of freight cars, throwing, dropping and other shipping hazards that might squeeze or otherwise damage the contents.



DIE CUT SHEETS

Die cut inner packing comes in an almost limitless range of shapes, sizes, thicknesses. It can be made to perform practically any protective function. The pieces nearly always are tailored around the product—usually a fragile article, an item of irregular shape or one of unbalanced construction. Die cut inner packing is being used increasingly today because of the wide variety of items now shipped in corrugated containers.



Interior safeguards recommended or developed by Union-Camp are saving many companies thousands of dollars annually in packaging costs. Not to mention untold dollars that have been saved through the elimination of shipping damage. Whatever your product, your Union Box representative will be glad to work with you in determining the most efficient and economical approach to your particular packaging operation.

Write for free, informative booklet "Interior Packing of Corrugated Boxes"

union camp **UNION BOXES**

UNION BAG-CAMP PAPER Corporation
233 BROADWAY, NEW YORK 7, N. Y.

Factories: *Savannah, Ga.; Trenton, N.J.; Chicago, Ill.; Lakeland, Fla.*

Sales Offices: *Eastern Division—1400 E. State Street, Trenton, N.J.*
Southern Division—P.O. Box 570, Savannah, Ga.; P.O. Box 454, Lakeland, Fla.
Western Division—4545 W. Palmer, Chicago, Ill.

6004 on Reader Service Slip.

sealing is completed, save for final fastening in a compression section.

The heat-sealers are twin-band units that pinch the folded paper liner between two continuously moving steel belts. Sealers are adjusted to hold liner under very tight compression, preventing the liner's bulky center seam from compressing and sealing prematurely.

With additional refinements in manufacture and construction, container may be able to compete with standard overwrapped cartons for non-liquid frozen foods. Latter cartons now run about two-thirds of new carton's cost.

("Fibrematic" carton and machine [which incorporates specially modified 14-pocket filler manufactured by Pfaudler Division, Pfaudler Permutit Inc., 1000 West Ave., Rochester 3, N.Y.] are developments of Fiberboard Paper Products Corporation, 475 Brannan St., San Francisco 19, Calif.)
6005 on Reader Service Slip.

Whiter bag paper stock from new bleach process

White, supercalendered "coffee bag" paper stock — used for such products as cookies, sugar and dog food, as well as coffee — has been made brighter than ever by a new bleaching process.

Recent package designs demand a brighter white stock to arrest and hold attention when product is displayed on supermarket shelf.

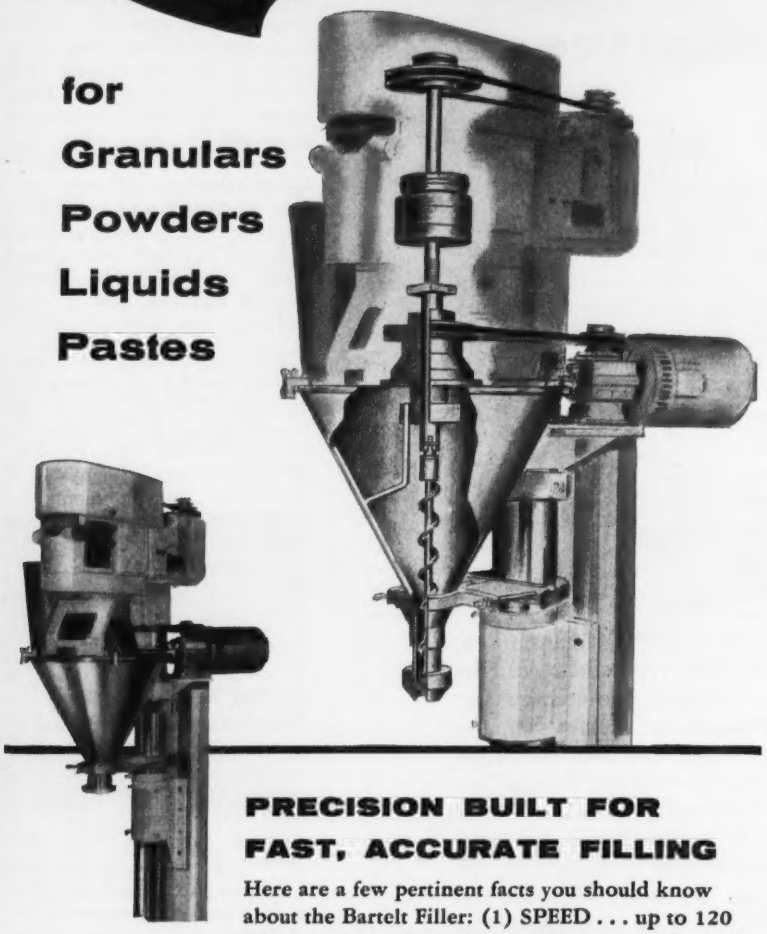
This contrasts with the situation years ago, when "coffee bag" paper first was introduced. Then, bags were inked all over, and color and brightness of stock were of less importance.

The process does not otherwise alter the paper stock, and its abilities to take ink, form, fill and close remain the same.

(Nibroc white "coffee bag" paper, produced using new bleaching process, is manufactured by Nibroc Division, Brown Company, 150 Causeway St., Boston 14, Mass.)
6006 on Reader Service Slip.

High speed, automatic BARTELT filler

for
Granulars
Powders
Liquids
Pastes



PRECISION BUILT FOR FAST, ACCURATE FILLING

Here are a few pertinent facts you should know about the Bartelt Filler: (1) SPEED . . . up to 120 fills per minute depending on the fill qualities and characteristics. Split fills can more than double this speed. (2) ACCURACY . . . variation no more than 3% (plus or minus 1½%) on most products. (3) VERSATILITY . . . *One* Bartelt Filler will handle granulars, powders, liquids, and pastes by means of interchangeable tooling. It can be applied to all types of operation . . . from hand lines to automatic packaging machinery. Fill quantities can be varied from one gram to five pounds.

Write Today for NEW Filler Catalog

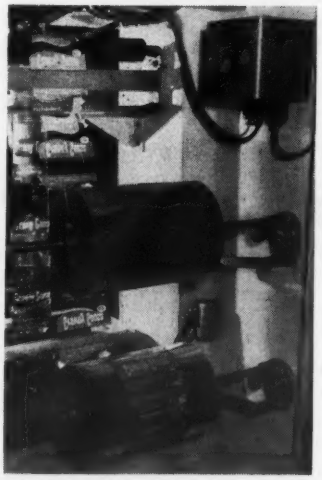
BARTELT ENGINEERING COMPANY
1900 Harrison Ave., Rockford, Ill. • New York Office: 370 Lexington Ave. NYC

6007 on Reader Service Slip.

Compact size means little floor space is required

Packages snack items at up to 60/min, changes quickly to new size. Result . . .

Fewer parts — lower expenses for bag forming, filling



Two rolls feed inner and outer films for 5 and 10 cent items at Granny Goose. Note design simplicity for easy maintenance, low initial cost

FRED MEYER,
Production Manager
Granny Goose Foods
as reported by **KARL ROBE**

Problem-Solution: Packaging snack foods such as cheese puffs and corn chips in five and ten cent cello bags can be prohibitively expensive if too many semi-automatic operations are involved.

Capital investment can also be burdensome if elaborate equipment is required.

Granny Goose Foods, Oakland, Calif., tried a low-cost packaging machine which forms bags from roll stock, then fills and seals them.

Machine has two net weighers which alternately fill as other scale is weighing for

next bag in production line.

Bags are formed around a simple mandrel and heat-sealer unit easily removable for replacement by another size during changeover.

If product flow stops, no bags are made, saving paper and empty-bag problems. Electric eye registers each bag. Brake mechanism for hydraulic end-sealer operation requires no adjustment.

Results: Machine was so successful on five and ten cent items that a second machine is now in operation. Machines operate at 42 to 45 bags per min net rate (daily production divided by gross hours of crew shift).

Speeds up to 60 bags per min can be attained. One operator is needed to case filled bags.

Machine is compact size, saves space. Simple construction requires little repair or maintenance. Changeover is accomplished in ten to fifteen min.

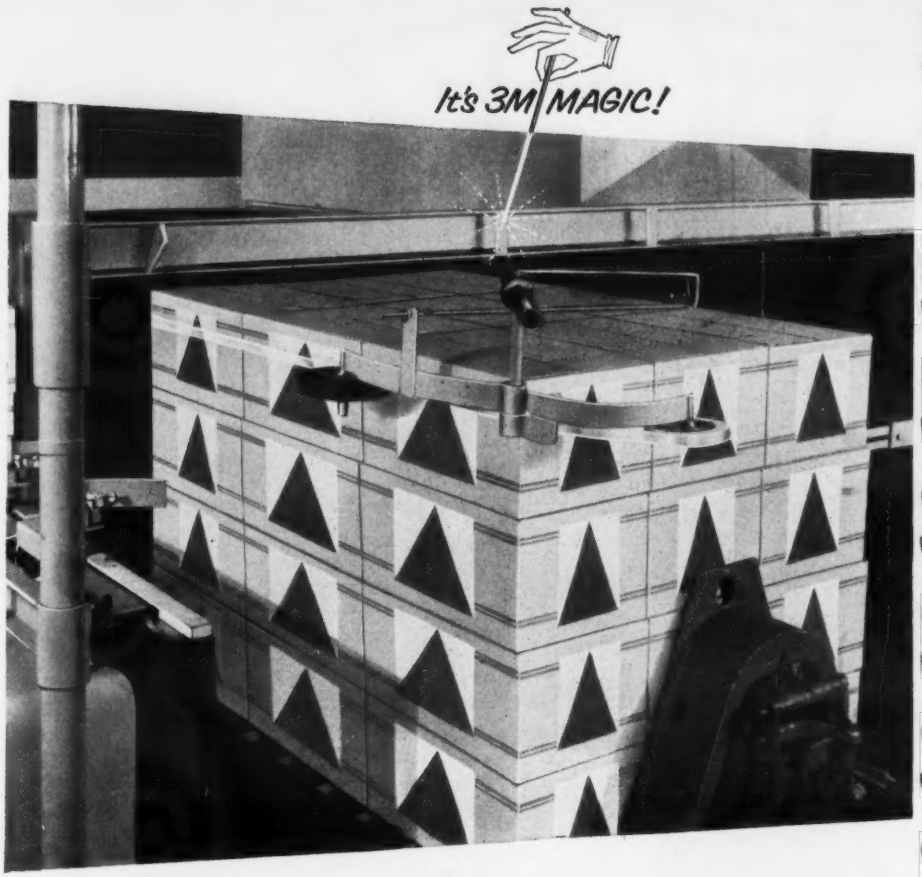
Multi-pack innovation

A perforating cutter attachment is used in place of regular end cutter to produce a six-bag multiple pack. Bags emerge from packager in sausage-like strings, each attached to other by their perforated ends.

This continuous string of bags is manually cut into six-bag units which are then folded back together. A tent-label is stapled over the two loose ends and the folded six-pack unit sold on spindle display racks.

(General Automatic Packager is product of General Packaging Equipment Co., P.O. Box 19031, Houston 24, Texas.) 6008 on Reader Service Slip.

SEE
Products & Packages
pages 18-19



SCOTCH BRAND
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TAPEnology takes over stack unitizing for new automatic Pallet Loader

A new automatic Pallet Loader, developed by Lathrop-Paulson Co., Chicago, now permits stacking and palletizing of shipping cases and cartons at a rate of 15-30 per minute. What's more, it also automatically unitizes the top layer of each pallet with a single band of super-strong "SCOTCH" Brand Filament Tape... thus assuring maximum load stability without the necessity of interlocking the stack pattern.

Tight-holding "SCOTCH" Brand Filament Tape sticks at a touch; unwinds easily for automatic application; holds firmly with a strength of up to 500 lbs. per inch of tape width. And tape won't cut into or damage cartons; is easily disposed of when no longer needed.

What do you ship? "SCOTCH" Brand Filament Tape offers dozens of time- and cost-saving shortcuts in holding, bundling, carton reinforcing and unitizing. Chances are, 3M Customer Engineering Service can show you how to utilize "3M-MATIC" Taping and Dispensing methods to get the economies of machine application. Ask your "SCOTCH" Brand Tape Distributor for information, or write: 3M Co., 900 Bush Ave., St. Paul 6, Minn., Dept. IAD-129.

When tape costs so little, why take less than "SCOTCH" Brand?

"SCOTCH" is a registered trademark for the pressure-sensitive adhesive tapes of 3M Co., St. Paul 6, Minn. Export: 99 Park Ave., New York 16. Canada: London, Ontario.

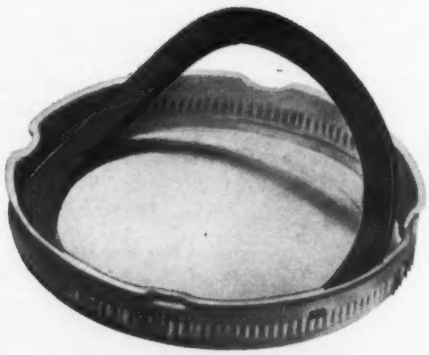
MINNESOTA MINING AND MANUFACTURING COMPANY
...WHERE RESEARCH IS THE KEY TO TOMORROW
3M COMPANY

6009 on Reader Service Slip.

On tank treads . . . and lug cap seals

Live rubber can take it

Forty tons of armor plate grind down on tank treads, over rocks, sand and concrete—but live rubber treads can take it. Live rubber seals in Crown lug caps can take it, too. Only Crown gives you the benefits of live rubber—your best choice for increased shelf life, fewer rejects and greater customer satisfaction. May we have the opportunity to discuss, or provide you with more details?



CROWN

for cans · crowns · closures · machinery

CROWN CORK & SEAL COMPANY, INC., 9300 Ashton Road, Philadelphia 36, Pa.

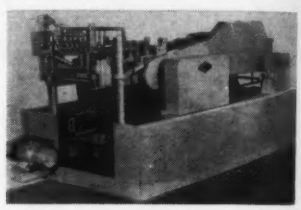
6010 on Reader Service Slip.

Continuous motion packer

Cases variety of container types and sizes fast

Uses-Features: Continuous motion case packer packs all bottles, cans and jars — up to 32 oz — in standard return cases or shipping cartons, including four-flap cartons. Speeds are up to 30 cases per min, depending on model.

System of interchangeable packing heads permits packing different sizes and types of containers with the same machine. Complete changeover can be accomplished in minutes.



Models are available to suit requirements of any plant layout

Description: Simple, continuously operating conveyors carry cases and containers to be packed through the case packer.

The head conveyor (and packing head mounted on outfeed end of this conveyor) is cantilevered over case conveyor on counterbalance springs, with outfeed end resting on the main operating cams.

As cams revolve, head conveyor follows cams downward from the hinged infeed end of conveyor, lowering packing head into the case for the packing drop.

As the head conveyor moves downward, a simple mechanical linkage raises the case to meet the packing head grid fingers. No compressed air is required.

Cases are moved into position under the packing head by a pusher-bar chain — to which they are released by an infeed timer.

Containers on the head conveyor are aligned between dividers by a self-contained

agitator, and guided into the packing head on retractable support bars.

As the head conveyor follows the main operating cams downward (as noted above), a stop lowers on the last containers on the conveyor to prevent their movement into packing head during the drop.

The entire head shifts away from the conveyor to prevent label scuffing, and the retractable support bars move under the packing head dividers to permit the containers to drop into the case.

The instant the packing head starts to follow the head conveyor upward on the main operating cams, the support bars return to original supporting position, packing head moves back against the conveyor, the stop raises and the head immediately begins to refill.

Case packer will operate continuously, with only casual attention from one man, unless there is interruption in supply of cases or containers.

Unit fits all standard conveyors, and receives containers and cases and discharges filled cases at standard conveyor heights. Space occupied is only 4 ft 9½ in. by 10 ft 4 in.

Atkron Dumore Continuous Motion Case Packer, manufactured by Atkron, Inc., Cuyahoga Falls, Ohio, is distributed and serviced exclusively by:

(Geo. J. Meyer Manufacturing Company, Box 452, Milwaukee, Wis.)
6011 on Reader Service Slip.

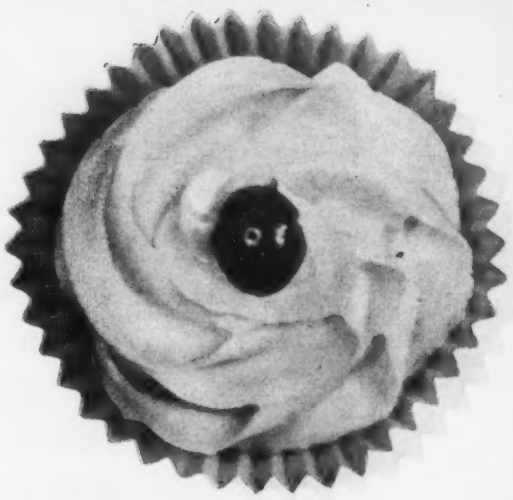
(Economic Machinery Company, Division of Geo. J. Meyer Manufacturing Company, 60 Fremont St., Worcester 3, Mass.)
6012 on Reader Service Slip.

Bonds polyethylene to waxed paper, chip board

Uses: New packaging adhesive is excellent for bakery trays and cartons used to package brown-and-serve cakes, cookies, frozen pies and other bakery products.

Adhesive also is useful for bonding various films to

(*Continued on next page*)



DI-CEL DI-CEL DI-CEL DI-CEL DI-CEL DI-CEL DI-CEL DI-CEL DI-CEL DI-CEL DI-CEL DI-CEL DI-CEL DI-CEL DI-CEL

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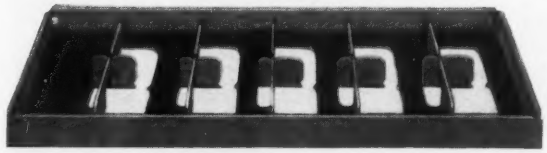
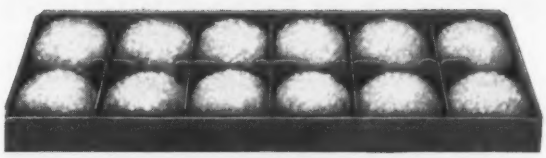




HERE'S WHAT DI-CEL DID FOR A LEADING BAKERY: Reduced handling costs by 20-25%. Reduced package material costs by 12%. Cut spoilage by more than 6%. These are the **actual** results achieved for a leading Midwest bakery by Di-Cel®, a new packaging system developed by Container Corporation. Provides unique packaging flexibility for a dozen different types of bakery items. In addition, bakery items can't roll or break in transit. Tops are fully exposed, instead of sides, for maximum sales appeal. Di-Cel also available in nested, tapered tray styles.

CCA **CONTAINER CORPORATION OF AMERICA**

Chicago 3, Illinois, and key marketing areas. **FOLDING CARTONS SHIPPING CONTAINERS SEFTON FIBRE CANS PLASTIC PACKAGING**

6013 on Reader Service Slip.

(*Continued from preceding page*)

waxed-surface packages used in the meat packing industry, and stands up well in frozen food cartons used for aqueous or fatty-type products.

Features: In addition to its primary function — adhering polyethylene and waxed paper — adhesive has given excellent results in bonds of polyethylene to paper, chip board and kraft board. However, the substance will not bond polyethylene to itself.

Description: Adhesive is permanently flexible, shock-resistant, non-inflammable and can withstand temperature extremes.

It can be applied by machine or spray, has quick grabbing qualities and dries transparent, without any residual odor.

Adhesive comes in different viscosities — ranging from 100 cps to 20,000 cps — for side seams and bottom seams. Delivery is in one- and five-gal cans, and 55-gal drums.

("Javatex" packaging adhesive is manufactured by Java Latex & Chemical Corporation, 1713 West Farms Rd., New York 60, N. Y.)

6015 on Reader Service Slip.

Single checkweigh unit handles multi-line output

Detects variances of ¼% of total package weight at speeds to 350/min

Uses: Compact production-control checkweigher handles virtually any semi-rigid container with one flat surface — ranging in size from 1½ by 1½ in. to 10 by 10 in.

Features: Any combination of overfilled, underfilled and acceptable packages can be rejected or passed by this two-way segregation unit.

Scale is individually tensioned or "preloaded" for each package size. Thus, even at high speeds, package weight variances of as little as ¼ per cent may be detected "on the fly."

Description: As container moves from the scale, an electronic system instantaneously classifies it and signals the re-

the first glass
container to
enter your lines
will, if it's
Tygart Valley
quality, be exactly
like the last
one off the lines

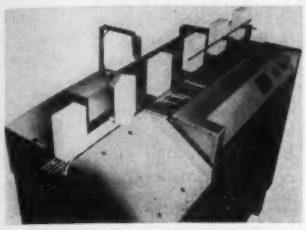
Uniformity is the key to Tygart Valley quality in glass containers

BROCKWAY GLASS
COMPANY, INC., Brockway, Pennsylvania
Sales Offices in Principal Cities
SUBSIDIARIES: Demuth Glass Works, Inc., Parkersburg, W Va.
Tygart Valley Glass Co., Washington, Pa.

6014 on Reader Service Slip.

ject mechanism. On-weight packages are passed. Unacceptable weights are diverted down a chute out of the production line by a solenoid-operated arm.

Unit is splashproof, easy to clean and occupies a floorspace of only two by four ft, with height adjustable to fit production lines.



Top speeds open up possibilities of installing single unit to handle output of two or more lines

Electronic system is mounted on a single, plug-in chassis, and housed in a slideout drawer for easy maintenance.

It can be equipped with a feed-back control for the filling unit, recording devices for permanent production records and special construction features for dusty or explosive atmospheres.

(FMC Special Checkweigher for two-way segregation is manufactured by FMC Packaging Machinery Division, 4900 Summerdale Ave., Philadelphia 24, Pa.)
6016 on Reader Service Slip.

Handwheel adjusts filler to varied container heights

Unit handles height range within six in. total variation

Uses: Two-line production machine fills cans, bottles, jars or paper cups with semi-viscous and viscous materials.

Features: Adjustable filling head assembly, controlled by a handwheel, facilitates setups for containers of different heights—within a six in. total variation.

New diagonal filling position of containers gives handling advantages and conserves space.

(*Continued on next page*)

Aluminum Foil Packaging – Anti-Oxidant Treated Materials

Report No. 24 of a Series by Reynolds Metals Co.

The prevention of oxidation and consequent rancidity in food products is obviously important to food manufacturers. Previous reports in this series have dealt briefly with two solutions to this problem: the use of aluminum foil packaging to exclude light, which has been proved a catalytic aid to oxidation; and the reduction or elimination of oxygen in the aluminum foil package by removing the air – either maintaining the resultant vacuum or replacing the air with an inert gas such as nitrogen. This vacuum or gas packaging is clearly an ultimate solution. However, it involves costly containers and equipment, making it too expensive for many types of food products.

Anti-Oxidant Development

Another method lies in the use of anti-oxidants – chemical compounds which specifically deter the oxidation of fat- and oil-containing foods and which can be incorporated directly into some food products. In the field of packaging, they were first used as coatings on the interiors of packages, performing their preventive function in direct contact with the product. This proved satisfactory only for solid masses of foods, where the total food surface is subjected to anti-oxidant contact. For food products such as cereals, made up of loose particles separated by air spaces, there cannot be sufficient contact between the food surface and the anti-oxidant coating. At the same time, the air spaces themselves form an internal atmosphere capable of causing rancid tastes and odors – regardless of the effectiveness of the package in keeping air out.

Volatilizing or Subliming

Recently, the Reynolds Metals Company has developed methods by which anti-oxidants are incorporated into aluminum foil packaging materials, so that the chemicals slowly volatilize or sublime into the atmosphere within the package. By permeating the air spaces in the product mass, they provide overall protection. And since the aluminum foil packaging itself has extremely low water vapor and gas transmission rates, the volatilized anti-oxidants are maintained within the package for extended periods of time.

The anti-oxidant compounds used in this method are approved by the Food and Drug Administration for use with foods. They are available with Reynolds Aluminum Foil carton liners, overwraps or bags. By this means the shelf life of cereals, crackers, cookies, confections and many other dry, fat-containing foods can be extended very considerably – without changing present wrapping and packaging equipment.

Chart Explained

The chart presented herewith shows taste-panel evaluation for rancidity of saltine type crackers when packaged in several different materials. The packages of crackers were stored at accelerated conditions of 100°F. and 90% relative humidity with the exception of the control packages, which were stored at 70°F. and 50% relative humidity. The following packages were evaluated:

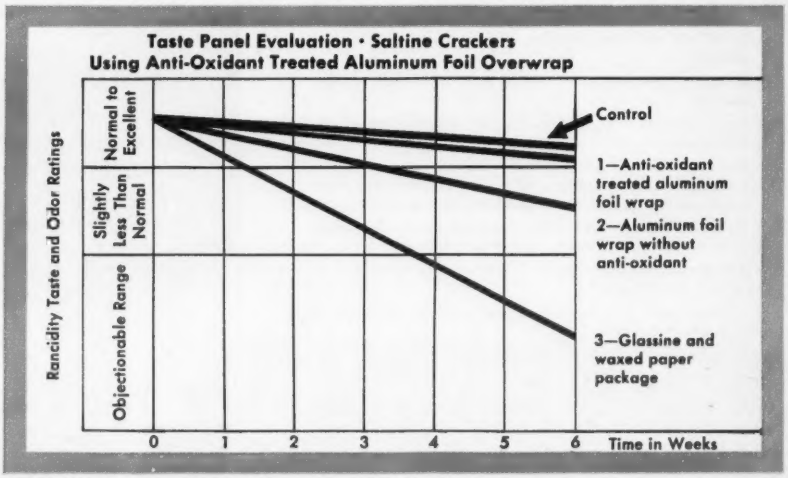
1. Reynolds anti-oxidant treated aluminum foil heat-sealing wrapper. (Four quarter-pound saltine cracker units each wrapped with *anti-oxidant treated Reyseal* in a chip-board carton.)
2. Reynolds aluminum foil heat-sealed wrapper. (Four quarter-pound saltine cracker units each wrapped with *Reyseal* in a chip-board carton.)
3. Glassine and waxed paper packaging.
   (Four quarter-pound saltine cracker units each sealed in a waxed glassine wrapper, in a waxed paper overwrapped carton.)

The control packages were the same as No. 3 except that they were stored at the normal conditions of 70°F. and 50% relative humidity.

Results Analyzed

Statistical analysis of the panel ratings for rancidity show that crackers in the anti-oxidant treated aluminum foil wrap achieved normal to excellent rating under the accelerated conditions of 100°F. and 90% relative humidity for the six-week period – a rating virtually the same as that of the control package stored at room conditions of 70°F and 50% relative humidity. The crackers in the aluminum foil without the anti-oxidant had a slightly less than normal rating after the six-week period at 100°F. and 90% relative humidity. The crackers in the package without aluminum foil were rated objectionable between the third and fourth week of storage at 100°F. and 90% relative humidity.

For further information on this or other phases of aluminum packaging, call your local Reynolds representative or write to **Reynolds Metals Company,** Richmond 18, Va.



See Reynolds shows—James Michener's "ADVENTURES IN PARADISE" Monday nights and "ALL STAR GOLF" every Saturday ABC-TV Network. © 1959 by Reynolds Metals Company

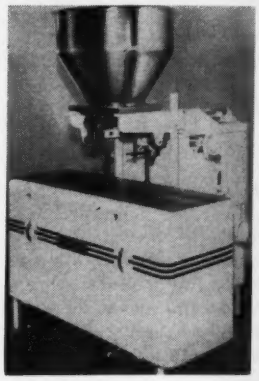
6017 on Reader Service Slip.

(*Continued from preceding page*)

Description: Fill accuracy is plus or minus one-half of one per cent by volume. A micrometer-type adjustment permits accurate material feed settings.

Production rate is from 20 to 60 fills per min. The stainless steel hopper has an 80-qt capacity.

Machine is equipped with a rising table for bottom-up fill. A no-container, no-fill device prevents feed of material when a container is not in filling position. Bar-type feed conveyor with easily removed bars provides gentle, swift container movement.



All operating units are enclosed and located out of the product zone

Power is provided by a one-half-hp motor operating through a variable-speed drive. Available as optional accessories are infeed and discharge conveyors, jacketed hopper and hopper agitator.

(New Colton-Hope Model 1-5RF-2 two-line production filling machine with adjustable filling head assembly is manufactured by Arthur Colton Company, Division of Snyder Corporation, 3400 E. Lafayette, Detroit 7, Mich.)
6019 on Reader Service Slip.

Electronic control sharpens fill accuracy see page 63 . . . .

For speed plus extreme accuracy in carton filling

fmc Straight-Line Carton Filler

with Straight-Line Carton Travel

Sure to be of interest to cost-conscious frozen food packers, and packers of other granular types of products, is the high speed FMC Straight-Line Carton Filler.

Revolutionary design includes all the new and proven principles of filling and carton handling that provide substantial savings to the packer. For example:

- Synchronized straight-line carton travel for higher speeds
- Accurate pre-measured filling with telescopic filling pockets
- Exclusive FMC "*No carton-No fill*" device that eliminates waste
- Individual *cut-off gates* on each pocket replace conventional dead plate design, and provide accurate, close tolerance filling while eliminating product damage
- Vertical adjustment of pockets for volume requirements — area of pocket opening remains constant
- Adjustable feed conveyor accommodates variances in carton dimensions
- Change parts available to adapt machine as retail or institutional model

Accessories for fully automatic machine include a rotary brush, vertically and horizontally adjustable; also, automatic feed hopper with agitator. Available with round pockets at slight additional cost. Get all the facts on this machine today.

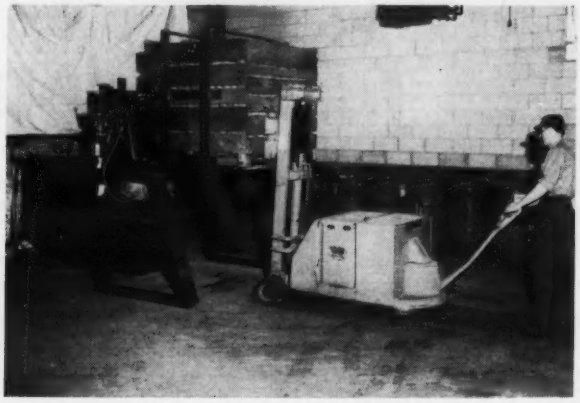
FOR TOP OPENING CARTONS—
MODEL 16-S (ILLUSTRATED WITH ACCESSORIES), FOR RETAIL SIZE, SPEEDS TO 240 CPM—
MODEL 8-S FOR INSTITUTIONAL SIZE, SPEEDS TO 110 CPM

Putting Ideas to Work

FOOD MACHINERY AND CHEMICAL CORPORATION
Canning Machinery Division
General Sales Offices:
WESTERN: SAN JOSE, CALIF. • EASTERN: HOOPESTON, ILL.

6018 on Reader Service Slip.

At right, pallet box filled with potatoes is loaded onto dumper. At left, operator actuates hydraulic mechanism, and load is emptied into hopper. Dumpers which lift a load prior to dumping also are available



Dumps anything — from soup to nuts!

Makes dumping filled pallet boxes a fast, one-man job

Hydraulic dumper, when loaded by hand truck or fork truck with heavy pallet boxes, takes the hard manual labor out of dumping any type of bulk food, or by-products.

At DanDee Pretzel and Potato Chip Company, Cleveland, this combination of truck and dumper has speeded up hopper-loading of potatoes, hence has increased rate of production. Additionally, since one man can handle entire sequence, many man-hours are saved.

Similarly, in a baking operation, dumping cumbersome loads of heavy dough was made simple and faster by using a hydraulic dumper adapted for the job.

Mixing bowl and carrying truck are rolled into the dumper, locked in place and the entire assembly is dumped — as one piece of equipment (see photo right).

Versatile unit can dump bulk foods in any phase of the production operation — including to-and-from storage, in the processing line or at waste-foods disposal areas. And, it can be fitted to dump all standard containers, or any special container used by a particular processor.

Smooth and effortless

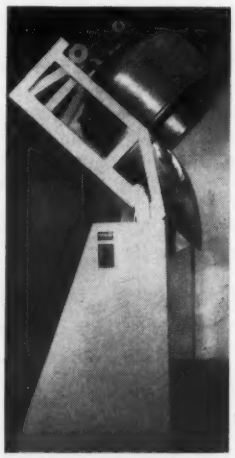
Dumping cycle is one smooth operation. Starting from loading position, the skip and container pivot 135 degrees to dumping position, making a dumping angle of 45 degrees.

When this position is reached, pivoting action automatically stops and load is dumped. Skip and container may be stopped anytime, anywhere while pivoting to the dumping position or returning.

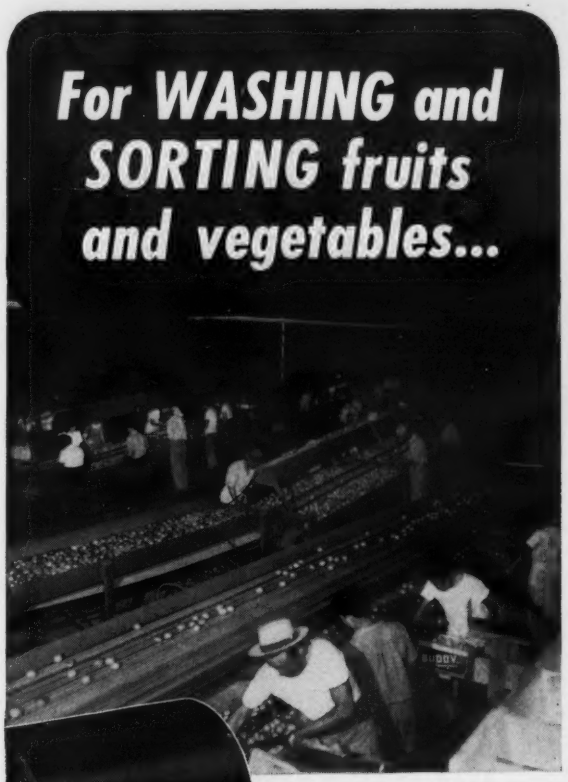
Dumpers may be either stationary or mobile units. Type of installation provided for stationary unit depends upon particular job application.

Mobile units come with heavy-duty ball-bearing casters, or with grooved casters for floor-track use. To insure safe dumping, all mobile units are equipped with two positive-action floor locks, to maintain a "permanent position" while

(*Continued on next page*)



In bakery, dough-mixing bowl and carrying truck are locked in place and entire assembly is dumped as a unit



200 SIZES
35 WIDTHS
7 THICKNESSES

...you can't beat BUFFALO'S RF&C WATERPROOF CONVEYOR BELT

R F & C stands for Rubber Filled and Covered and that's exactly how this favorite of the food packing industry was created. We took our basic Solid-Woven Cotton Belt and saturated it with rubber. Then we added a tough rubber overcoat to produce the perfect LONGER LASTING belt for fruit and vegetable washing and sorting. Highly resistant to abrasion and abuse this TOUGHER completely WATERPROOF belt, which is flexible to –50° F., has long been the NUMBER ONE CHOICE of packers everywhere.

Send for Free Manual

that fully illustrates and describes our belts, their sizes, prices and uses.

BUFFALO WEAVING AND BELTING CO., INC.
204 CHANDLER STREET BUFFALO 7, NEW YORK
NEW YORK • CHICAGO
We also manufacture a complete line of WEBBINGS & PURE SHEET RUBBER

6020 on Reader Service Slip.

(*Continued from preceding page*)

dumping.

Both models can be operated by a manual lever or by push-buttons.

Power is supplied by two large hydraulic cylinders, actuated by an electric motor. Size of motor depends on capacity for which the dumper is designed — which may range up to three tons.

Standard components include: switch, magnetic starter, five-gal reservoir, pump, filter, oil-level gauge and air-breather strainer.

(ESSEX Hydro-Dumper is manufactured by Essex Conveyors, Inc., 165 Franklin Ave., Nutley 10, N.J.)
6022 on Reader Service Slip.

Conveys around in-plant or in-truck obstructions

Uses: Wheel-type telescoping conveyor will handle all packages nine in. in length, or longer, provided packages can be handled on a conventional wheel-type conveyor.

Conveyor telescopes, pivots and swings

Features: Versatile unit not only extends its three 18-in.-wide sections from 11 ft 10 in. to 29 ft 6 in., but can also be pivoted or swung inside a truck or freight car, or around roof supports and stacks of cases inside a warehouse.

At its discharge end, conveyor will service any point from straight ahead to approximately 90 degrees either left or right.

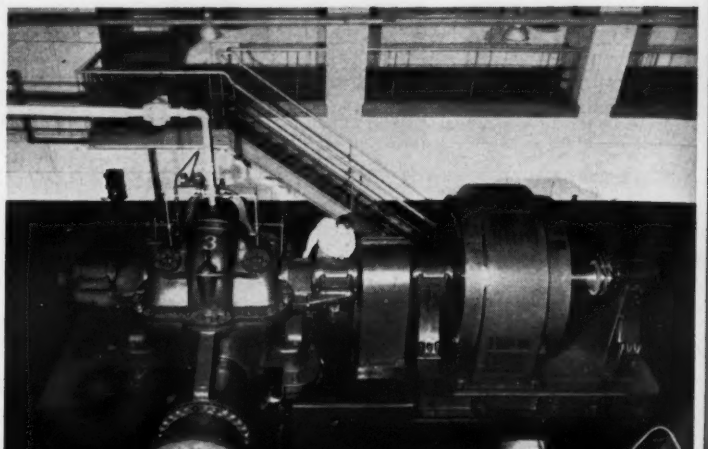
Description: Each of the three telescoping sections consists of four paired "Live Rails" — another patented development. Wheel pattern

This Yarway team has scored high—over a million installed on all types of steam equipment. Stocked and sold by 270 Industrial Distributors. For free Steam Trap Book, write YARNALL-WARING CO., 100 Mermaid Ave., Philadelphia 18, Pa.

go YARWAY with confidence

6021 on Reader Service Slip.

A case for F-M Split-Case Centrifugals!



Typical installation in Toledo averages 80.314% wire-to-water efficiency for year!

Exceptionally high and dependable efficiency with steady, low-cost operation year after year—that's the report from a host of municipalities and industries using Fairbanks-Morse pumps in their pumping stations.

Why? Ask stations like Collins Park High Service in Toledo, O., where five Fairbanks-Morse 36-in. Split-Case Centrifugal Pumps have been giving superb performance for 17 years. The No. 3 pump in the photo pumped 6,065,590,000 gallons in one year alone, handling 26.13 percent of the plant total, and consuming just 3.55 kilowatts hours per million foot gallons!

Your Fairbanks-Morse Field Engineer welcomes you to inspect many other reports like this from his files—reports revealing why no other manufacturer can match the experience of Fairbanks-Morse in providing pumps and drivers for both municipality and industry. Your F-M Field Engineer will be glad to work with your own engineers in selecting the best equipment for your specific requirements. Write Fairbanks, Morse & Co., 600 S. Michigan Ave., Chicago 5, Ill.

See Sweet's Product Design Catalog File for complete F-M Pump Line.

FAIRBANKS-MORSE
a name worth remembering when you want the BEST

PUMPS • SCALES • ELECTRIC MOTORS • DIESEL, DUAL FUEL AND GAS ENGINES
LOCOMOTIVES • COMPRESSORS • GENERATORS • MAGNETOS • HOME WATER SYSTEMS

6023 on Reader Service Slip.

produces 32 wheels per ft of length, and handles a capacity of up to approximately 60 lb per ft.

Pipe stand supports, readily adjustable to heights of from 21 to 60 in., have rubber-tired ball-bearing casters. High end is equipped with a floor lock.

(Model No. T-4P-18-310 A-F "Pivot Swing" telescoping conveyor is manufactured by The Alvey-Ferguson Company, 2728 Disney St., Cincinnati 9, Ohio.)
6024 on Reader Service Slip.

Slits and empties up to 20 bags per min

Bag opener slits multiwall bags, dumps contents and ejects empties in five integrated steps.

Four-page bulletin which describes this machine also has photos and drawings illustrating the various steps in the operation.

Brochure discusses design modifications and accessory equipment. Technical data and specifications are included.

("Bag Slitter," is available from the Wiretyer Corp., 65 Leliarts Lane, East Paterson, New Jersey.)
6025 on Reader Service Slip.

FORKLIFT FEATURE
pages 91-93

Presents air vibrators and their applications

Bulletin details applications of one-piece air vibrator in moving bulk materials through hoppers, bins, chutes. Units also are available for bulk feeding applications and for unloading covered railroad hopper cars and bulk truck-trailers.

Illustrations show vibrators operating successfully in hazardous atmospheres, extreme

(*Continued on next page*)

Louisville Dryer—10 feet in diameter, 10 stories long!

Turn a ten story building on its side, and there'd be room to spare on either end of this huge pit lathe at Sharon, Pennsylvania where this 10′ x 110′ Louisville Dryer was fabricated.

This lathe is used for machining the reinforcing bands onto which are mounted the forged steel tires. This careful workmanship assures concentricity of the completed dryer shell—a primary factor in efficient seal operation.

Every Louisville Dryer is especially designed, manufactured, assembled and installed for its specific task.

If you have a problem involving process equipment, call or write our equipment specialist in your area. Here, as in so many fields, you'll find IT PAYS TO PLAN WITH GENERAL AMERICAN.

Process Equipment Division
GENERAL AMERICAN TRANSPORTATION CORPORATION
135 South LaSalle Street, Chicago 3, Illinois.
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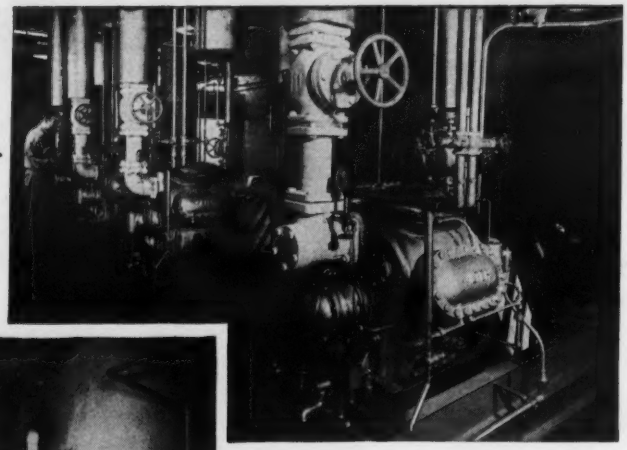
PROCESS EQUIPMENT DIVISION GENERAL AMERICAN TRADE MARK

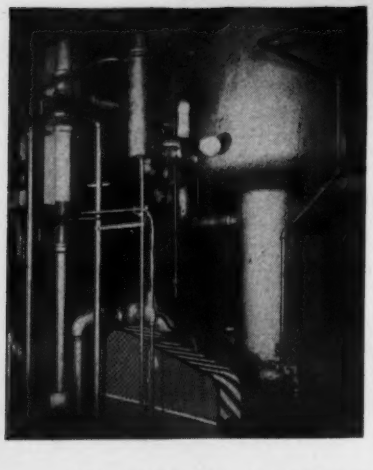
Louisville Dryers

6026 on Reader Service Slip.

View showing four of the Vilter VMC ammonia compressors installed at the Miami Margarine Co., Cincinnati, Ohio. ▶

View showing large-capacity Vilter Liquid Transfer System. ▼





"Proven in Operation"

A decade of trouble-free compressor operation builds strong acceptance for VILTER refrigeration

Miami Margarine placed their first order for a Vilter 8-cylinder VMC compressor in 1950. It performed perfectly. During the next eight years, five additional Vilter compressors were purchased and installed—one at a time. Each new VMC produced such a satisfying record of performance that it literally sold the succeeding one. "Proven in operation" really paid off in extra sales . . . and present plans call for the installation of additional VMCs!

Miami Margarine uses their VMCs to operate Votators at −12° F. The compressors, however, are not the only Vilter equipment. Miami Margarine also uses a Vilter liquid return system, four evaporative condensers and several air units, all of which have performed up to expectations and then some.

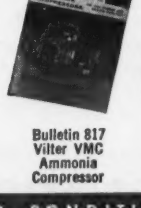
Says Mr. Larry Michaels, maintenance engineer for Miami Margarine, "*Taking care of Vilter compressors is the easiest maintenance job I've ever had. Those VMCs practically tend themselves . . . they're so dependable and trouble free.*"

Vilter VMC compressors deliver an excellent return for each refrigeration dollar invested—more capacity in less space; smooth running, reliable performance; easy-to-service design; built-in automatic capacity reduction.

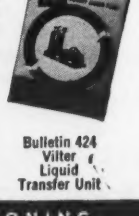
If you, too, want proven operation and efficient performance in your refrigeration equipment, see your nearest Vilter representative or distributor today.

Sold and Installed by Vilter Distributor, C. P. Wood & Co., Cincinnati, Ohio

Write for these helpful bulletins to:
The Vilter Manufacturing Company, Dept. D-902
2217 S. First Street, Milwaukee 7, Wisconsin



Bulletin 817 Vilter VMC Ammonia Compressor



Bulletin 424 Vilter Liquid Transfer Unit

Vilter®
REFRIGERATION and AIR CONDITIONING

THE VILTER MANUFACTURING COMPANY, Milwaukee 7, Wisconsin
Air Units • Ammonia & Freon Compressors • Booster Compressors • Baudelot Coolers • Water & Brine Coolers • Blast Freezers • Evaporative & Shell & Tube Condensers • Pipe Coils • Valves & Fittings • Pakice & Polarflake Ice Machines

6027 on Reader Service Slip.

material handling

(*Continued from preceding page*)

moisture conditions, outside in severe weather and in magnetic dust conditions.

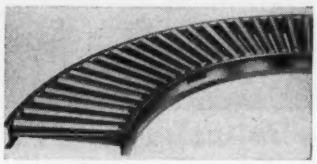
Specifications and mounting information on eight different models are included.

(Catalog 303, "Navco Bin and Hopper Air Vibrators," four pp, is available from The National Air Vibrator Company, 435 Literary Rd., Cleveland 13, Ohio.)
6028 on Reader Service Slip.

Tapered rollers minimize carton slip on curves

Features: New tapered roller conveyor curve, in sections of either 45-degree or 90-degree angles, provide more effective carton alignment and practically eliminate slippage.

The sections are reported to cost approximately 20 per cent less than others of comparable size now on the market.



The 90-degree section (shown) consists of 21 rollers; the 45-degree section, 11 rollers

Description: All rollers are constructed of 14-gage seamless steel tapered tubing 15 in. long, with a 1⅝-in. diam at the small end and a 2½-in. diam at the large end.

However, a bearing adaptor is pressed into large end of the roller to permit use of the same size bearing at both ends.

Frame widths of both sections are 18 in., with a 10-gage formed steel channel.

The rollers can be set in a 3½ in. frame with a projection of 5/16 in. above the frame, or in a 4 in. frame with the frame 1 3/16 in. above the rollers.

(New tapered roller conveyor curve is manufactured by The Rapids-Standard Co., Inc., 342 Rapistan Bldg., Grand Rapids 2, Mich.)
6029 on Reader Service Slip.

Highly Intimate Blends in 1 to 2 Minutes

Blends while discharging; No segregation or flotation

Sturtevant Rotary Blenders start 4-way blending while charging, continue it during discharge, thus producing highly intimate, even blends of dry and semi-dry materials – within 3 to 5 minutes of start of charging.

Six *complete* blending cycles per hour are common. And Sturtevant's special action produces no particle reduction, cleavage or attritional heat – is highly effective yet gentle and safe even with explosives.

Receiving
Scoops cascade material as drum rotates. Movement forces material from both ends to middle. Thus blending is 4-way right from start of charging.

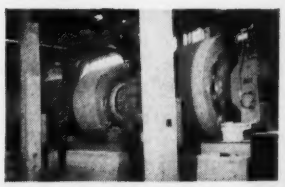
Discharging
Single gate controls charge, discharge. Blending continues throughout discharge phase. Result is no segregation or flotation — highly intimate, even blends.

Self-cleaning, dust-sealed drum; one-man accessibility

Operation of Sturtevant Blenders is self-cleaning – drum interiors are completely dust-sealed. For inspection of all models, one man simply loosens a few lugs to remove manhole cover – quickly and easily.

Nine standard models with capacities to 900 cu. ft.

10 cu. ft. Sturtevant Stainless Steel Blender at U.S. Steel's Applied Research Laboratories. Corrosion and contamination-proof, this unit handles batches up to 500 lbs. — is ideal for critical work or small runs.



Automatically controlled, three 50 cu. ft. Sturtevants blend chocolate powder and other ingredients for Hershey Chocolate Corp. Operating in a group, each Blender can process more than a ton per batch. Quick accessibility and self-cleaning features keep maintenance to one hour per week.

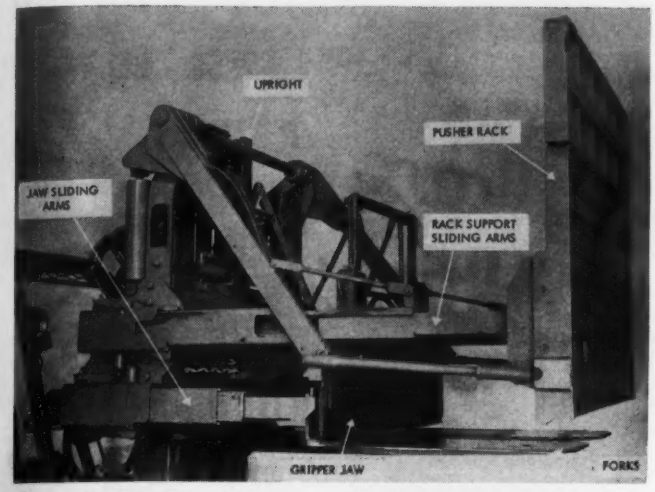
Fully or semi-automatic, or manually controlled operation

Constructed of carbon steel, stainless steel or Monel metal, Sturtevant Rotary Blenders are engineered to fit each customer's needs – can be supplied with injector sprays and any desired control system.

For more on Sturtevant Blenders, request Bulletin No. 080B. (Bulletins also available on Mixers, Air Separators, Micronizers, Crushers and Grinders.) Write today. STURTEVANT MILL CO., 122 Clayton St., Boston, Mass.

6030 on Reader Service Slip.

New Developments in fork lift trucks



To pull load-carrying sheet onto forks, truck operator opens gripper jaws. This automatically connects the jaw and pusher rack so that they operate simultaneously. Pusher rack and jaw are extended to the desired point. The jaw is closed on the sheet. Pusher rack and jaw are retracted to pull sheet onto the forks. When both are fully retracted, the jaw automatically latches the main frame of attachment, so that pusher rack and jaw then operate independently.

At unloading point, pusher rack is extended while jaw remains retracted and closed on sheet. This pushes the load off the sheet. Another way of unloading is to place load in the desired final position, with jaw gripping the sheet, and extend pusher rack. In effect, this pushes the fork truck away from the load.

All controls for these actions are hydraulically activated, with control levers placed on the fork truck cowl within easy reach of operator

Palletless handling attachment . . .

Retrieves its own load-carrying sheets

A first-of-its-kind fork truck attachment which retrieves the load-carrying sheets used in palletless handling overcomes the previous disadvantage of the "Pul-Pac" method of palletless handling — loss of the sheet at final destination.

In this method, load-carrying sheet is pulled onto the truck's forks by a gripper jaw. Load removal is accomplished by a pusher rack, which pushes both load and load-carrying sheet off the forks.

Since there had been no method for pulling the sheet out from under its load, and since most such palletless handling operations are sizeable, the loss of the sheets involved a significant figure.

Unique design of new attachment — which permits the gripper jaw and pusher rack to act simultaneously or independently of each other (note photo and caption above) — is reason for the device's retrieving ability.

Load-carrying sheet may be retrieved either by pulling it from under its load, after load has been deposited, or pushing the load off the sheet while

(Continued on next page)

SPROUT-WALDRON SW Pointers

for Mixing and Blending • Size Reduction • Pelleting and Densifying • Size Classification • Bulk Materials Handling

Published in the interest of better processing by Sprout, Waldron & Co., Inc., Muncy, Pa.

PRODUCT HANDLING IS FASTER, CLEANER, SAFER BY AIR

at modern C. F. Mueller food processing plant

Moving farinaceous material at the rate of 125,000,000 lbs. per year is a big job, even for C. F. Mueller Company, one of the world's largest producers of macaroni and egg noodle products. Here is what the Sprout-Waldron pneumatic bulk handling installation has accomplished:

1. Saved more than 25,000 square feet of floor space.
2. Saved approximately $150,000 per year over previous mechanical and manual systems.
3. Simplified the maintenance of high sanitation standards.
4. Released more than $40,000 worth of materials handling equipment for other service.
5. Reduced the accident potential and simplified housekeeping and maintenance operations.

The unloading system consists of a negative pressure pneumatic unit which removes the material from the Airslide cars, elevates it to a product recovery unit from which it is taken by gravity through Gyro-Whip sifters which screen out oversized material and pass the product to a surge hopper. The material is then gravity fed into a scale where it is automatically weighed and recorded, then taken by positive pressure pneumatic system to any one of eighteen steel storage silos with a total storage capacity of 2¼ million pounds.

The silos are arranged in clusters of six with screw feeders set up to take the discharge into special blending surge hoppers. The blending system allows for the removal of material from any two or several of the eighteen silos at a pre-determined rate and for combining them into a homogenous blend which is then conveyed by positive pressure to any of the silos.

The positive pressure system is also used to convey the blended material from the storage silos to the processing plant. By a preselected plan this distribution system automatically fills any of the bins in the processing plant as they require material.

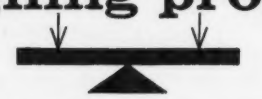
The design and engineering of this modern unloading, blending and distribution and storage system was accomplished by means of closest possible teamwork between C. F. Mueller Production Manager, John Curry; Plant Engineer, Charles Becht; Project Engineer, August Stark; and the Materials Handling Division of Sprout-Waldron. The entire operation, which when operating at capacity can receive, blend and deliver to the processing plant approximately 125,000,000 lbs./ year is handled by one man on each shift. For complete details, ask for Bulletin I-47. FOP/103

PRACTICAL PNEUMATIC CONVEYOR DESIGN

A technical article by the Chief Engineer of our Materials Handling Division. It tells how to select, operate and maintain pneumatic systems for transporting dry, bulk materials. Positive, negative and combination systems are illustrated and described. Ask for Bulletin I-28.

6031 on Reader Service Slip.

How did this team solve an age-old weighing problem?

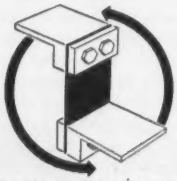


Since 5,000 B.C. men have been trying to devise a pivot balance that would be highly sensistive yet remain accurate. The breakthrough came in 1956 when the United States issued a patent for a "Thayer Flexure Plate" Leverage System. A team of engineers and businessmen, aware of industrys great cumulative loss of materials in weighing operations, had inventéd a revolutionary new scale.

Knife-edged pivots that progressively wear and change were replaced by Thayer Flexure Plates that move only .001", yet accurately reflect the minutest changes in weight. This *firmly joined* lever withstands shocks and vibrations indefinitely. Dirt and dust are no longer a problem. Thayer guarantees this leverage system accurate for the life of the scale.

How Can It Save You Money Year After Year?

Working in conjunction with straight electrical controls, it forms the most reliable, low maintenance system ever devised to control processing or materials handling *by weight*. Literature on its application to filling, batching and checkweighing operations is available on request.



THAYER SCALE

AUTOWEIGHTION SYSTEMS FOR FILLING, BATCHING AND CHECKWEIGHING

THAYER SCALE CORP. THAYER PARK, PEMBROKE, MASS.

6032 on Reader Service Slip.

fork lifts

(Continued from preceding page)

both load and sheet still are on forks of truck.

With the attachment, a fork truck can be used for five separate operations: 1) sheet-retrieving "Pul-Pac" operation; 2) standard "Pul-Pac" operation without sheet retrieving; 3) standard pusher operation, where load is pushed off forks (with no sheet required).

Also, 4) regular fork truck operation with standard wooden pallets (with pusher rack and gripper jaw fully retracted); 5) chisel-fork truck operation, where load is picked up by sliding chisel forks under it, (with pusher rack and gripper jaw fully retracted).

Controls for all operations are hydraulically activated with control levers placed on fork truck cowl within easy reach of operator.

Optional equipment for attachment includes a side-shifting device and a Plexiglas facing for the pusher rack.

(Model 5000 Sheet Retrieving Pul-Pac has been introduced by Clark Equipment Company, Industrial Truck Division, 1921 Escote St., Battle Creek, Michigan.)

6033 on Reader Service Slip.

Exceptional visibility . . . afforded by exclusive "Monomast" single upright is obvious from photo. New-type mast is available on lift trucks of 2000 to 4000 lb capacity.

("Monomast" single upright, shown on a Hyster Space-Saver 40, is development of Hyster Company, 2902 N.E. Clackamas, Portland 8, Ore.)

6034 on Reader Service Slip.

HOLZ Vulco-Lagged PULLEYS

GRIP BETTER TO KEEP TRACTION.. UP UP

DRIVE HARDER TO KEEP PRODUCTION.. UP UP UP UP

WEAR LONGER TO KEEP PROFITS.. UP UP UP UP

VULCO-LAG PULLEY

HOLZ Vulco-Lagged PULLEYS step up performance and eliminate seasonal maintenance to save you dollars and downtime! Tough, abrasion-resistant lagging of specially compounded rubber is permanently bonded to metal pulleys for positive, non-slip driving. Pulleys run longer without relagging*; belts run longer without renewing! Have lagging applied to **your** pulleys, or order **HOLZ Vulco-Lagged Pulleys** complete. Write for detailed information today.

*Up to 10 years operation reported on HOLZ Pulleys.

"IF IT'S RUBBER, WE CAN MAKE IT!"
SERVING INDUSTRY FOR A QUARTER CENTURY

HOLZ RUBBER COMPANY, INC.

1133 SOUTH SACRAMENTO STREET
LODI, CALIFORNIA

Dealer inquiries solicited.

6035 on Reader Service Slip.

'Get the most from your lift truck' . . .

. . . invites handy little booklet, which then, through liberal use of catchy illustrations closely tied in with the text, explains *how* to do this.

For example, in a facetious vein, drawing from booklet, reproduced above, advises operators to "get a horse" if they want to play cowboy.

Although intended as a guide for operators of manufacturer's line of lift trucks, most of the information is pertinent to any in-plant truck operation, regardless of truck make.

(BU-455, "How to Get the Most out of Your Lift Trucks," 24 pp, is available from Allis-Chalmers Manufacturing Company, Tractor Group, 1126 S. 70th St., Milwaukee 1, Wis.)
6036 on Reader Service Slip.

On food conveyors — 'filled nylon' extrusion outwears brass surfaces

Uses: U-shaped molybdenum disulphide-filled nylon extrusion, installed under wire rod belting of food conveyors, reduces surface friction wear and noise and eliminates need to resort to undesirable (or impractical) lubrication.

Wear-strips of same material also provide excellent wear cushion between metal bottling chain and conveyor stands.

Features-Description: Molybdenum disulphide is homogenously dispersed in the nylon extrusion, providing a uniform "internal lubricant."

(*Continued on next page*)

TWENTY-TON LOAD aboard trailer fails to bother multiwall sack made with CLUPAK kraft. Patented, built-in stretch absorbs shock as wheels pass completely over. Sack contains 100 pounds of abrasive sand-blasting grit, found difficult to package prior to use of CLUPAK paper multiwalls.

SAVINGS PILE UP when CLUPAK paper multiwalls are used. Flexibility lets them fill better, may cut storage or shipping space up to 25%. Sacks can be palletized higher, easier, because they stack better.

CLUPAK TRADEMARK is your assurance the bag paper meets the most rigid of shipping requirements, even when CLUPAK paper toughness makes possible lower total basis weight. Look for the trademark.

NEW PAPER WITH REVOLUTIONARY "*TOUGHNESS*" CUTS MULTIWALL BREAKAGE...AND COSTS, TOO!

BETTER PERFORMANCE, LOWER COST! CLUPAK Extensible Paper opens a new era in paper . . . makes it virtually a new material, with unlimited applications. For CLUPAK paper has built-in *stretch* or extensibility which lets it absorb the shocks and strains that cause ordinary paper to rip, tear and puncture. The result is a new dimension in paper—*toughness*. In multiwall sacks, CLUPAK paper toughness delivers far better performance . . . often at lower cost, by permitting fewer multiwall plies and a net saving in total basis weight. And CLUPAK paper *flexibility* can mean additional advantages—faster filling, easier handling and stacking.

KEY FACTS FOR BUYERS: CLUPAK kraft is the same as ordinary kraft except that it is stronger, tougher and more flexible. It can be made in many basis weights, and with varying degrees of stretch. Printability, surface friction, porosity and other properties can be controlled as with ordinary paper. Clupak, Inc., does not make paper. It carries on continuous research and development work, and results are made available to all licensees, listed below. **Clupak, Inc., permits use of its trademark only on paper which meets this company's rigid toughness requirements.** Clupak, Inc., 530 Fifth Avenue, New York 36, N. Y.

BE SURE TO LOOK FOR THIS TRADEMARK

EXTENSIBLE
CLUPAK®
PAPER
*

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Buy CLUPAK paper and products made with CLUPAK paper from:

Albemarle Paper Mfg. Co.
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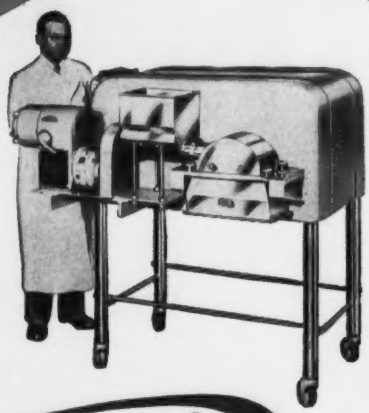
Continental Can Company, Inc.
Dynas Aktiebolag (Sweden)
Hudson Pulp and Paper Corp.
International Paper Co.
St. Lawrence Corp., Ltd. (Canada)
St. Regis Paper Co.
Union Bag-Camp Paper Corp.
West Virginia Pulp and Paper Co.

6037 on Reader Service Slip.

FOR Better
UNIFORMITY and CONTROL
of Color, Taste and Consistency



CogMills
are used for—
GRINDING
spices, dates, soup stock, dehydrated beef, Vienna bread and chicken bones.
SHREDDING
and blending cheese.
BREAKING
horseradish roots and grinding while blending with vinegar.
SPRAY BLENDING
coffee oil into instant coffee.
CHOPPING
GRANULATING
PULVERIZING
DISPERSING
wet and dry solids, liquids, pastes, emulsions and slurries.

★ Exclusive snap-apart design permits quick thorough cleaning.
★ Stainless steel product contact areas.
★ Dustless, liquid-tight operation.
★ Bearing isolation prevents contamination by lubricant.
★ Manual or continuous feed.
★ Temperature controlled models.

Send for details, designating product to be processed and rate of production desired.

THE COG CORPORATION
Division of Motiograph, Inc. • Established 1896
4389 W. LAKE STREET • CHICAGO 24, ILLINOIS
A. Torres Export, Inc. • 2550 W. Peterson Avenue • Chicago 45, Ill., U.S.A.

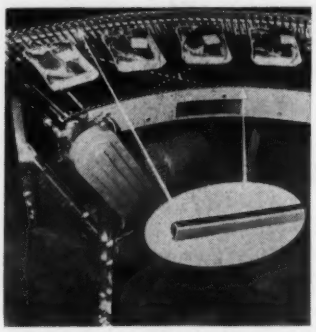
6038 on Reader Service Slip.

(Continued from preceding page)

The "moly"-filled nylon also has greater rigidity and better dimensional stability than regular nylon formulation, thus being more resistant to deformation under load.

Superior heat resistance to that of molded nylon 101 (above 300 F vs 150-200 F) is another advantage. Hence, higher applied loads are possible under high-temperature conditions.

New material has the valuable application properties of



Profile shape (inset) is force-fitted over slide rails (arrows) and pinned at one end only. Firm gripping action prevents food particles from imbedding between wear track and rail

nylon: non-galling and non-scratching characteristics, sound-dampening qualities, resistance to oils, greases, most alkalis, solvents and organic acids.

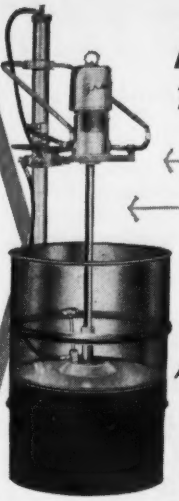
(NYLATRON GS filled nylon profile extrusions, as used on food conveyors manufactured by Union Steel Products Company, Albion, Mich., and NYLATRON GS rods, strips, tubes, tubular bars and plates, are manufactured by The Polymer Corporation of Pennsylvania, A Subsidiary of The Polymer Corporation, 2140 Fairmont Ave., Reading, Pennsylvania.)
6039 on Reader Service Slip.

Corrosion protection built into conveyor line

Superior rust resistance for conveyor components is assured by metal finishing process which uses a special so-

NEW
Better Way To Transfer Foods
Shortening
Dough
Fillings
Toppings
And 100's of other hard to handle materials.
Cleans your drums at the same time!

Transfer "STICKY" STUFF "Direct-from-Drum" To Job!



● This new, air-operated pump and forced induction plate completely seals in the material, prevents contamination, spillage, channeling and waste. Eliminate slow hand operation and messy transfer of difficult material!

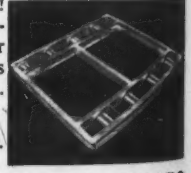
You paid for all of it... now get all of it! Graco Inductors move from top to bottom, scrape drum sides entirely clean, get *all* material from drum. Sizes for 55 gal. drum, half drum or 5 gal. pail. Write today for details!

GRACO "DIRECT-FROM-DRUM" PUMPS
GRAY COMPANY, INC.
1222 Graco Square • Minneapolis 13, Minnesota
FACTORY BRANCHES: New York (Long Island City) • Philadelphia • Detroit
Chicago • Atlanta • Houston • San Francisco
SALES OFFICES: Washington • Toronto

6040 on Reader Service Slip.

Pallet Load MOBILITY

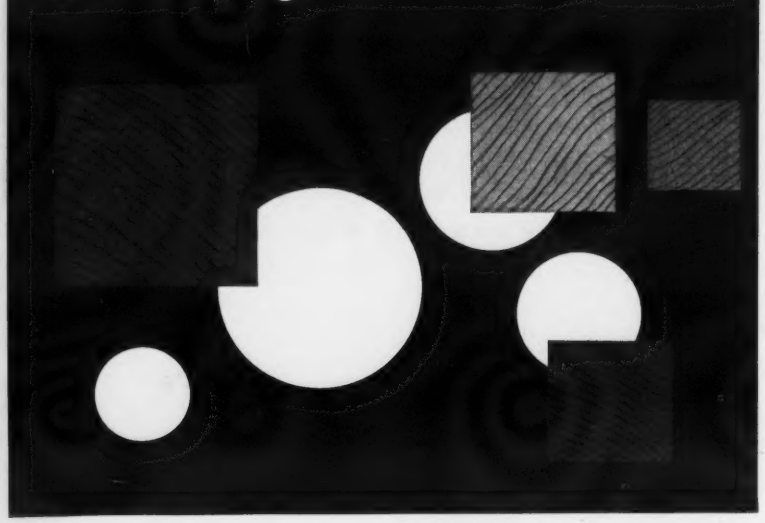
...WHEN YOU NEED IT...WHERE YOU NEED IT!
Magliner Magnesium Pallet Dollies keep pallet loads moving—stock movement fluid. They pay for themselves quickly by freeing men and power equipment from short-haul loading operations. Eliminate bottlenecks . . . lower loading costs!
Magliner pallet dollies are magnesium light, easily carried back to the loading point, fast—by one man! Large 3¼" rollers for free rolling movement. Rugged, welded construction for dependable long-life service. Capacities to 4,000 lbs. 14 standard models and sizes.



Write for Bulletin P8-1
MAGLINE INC., P. O. BOX 4012, PINCONNING, MICH.
Canadian Factory—Magline of Canada Ltd., Renfrew, Ont.
MAGLINER MAGNESIUM PALLET DOLLIES

6041 on Reader Service Slip.

How many of Your Scales are SQUARE Pegs in ROUND Holes?

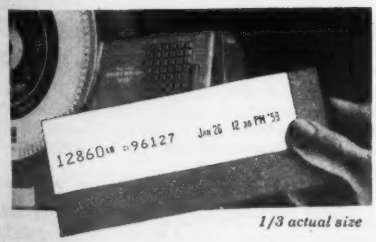


Accuracy alone is not enough ...Scales must *fit the job*

Scales that were right for their jobs in your plant yesterday may be "misfits" today. This can easily happen as a result of *changes* in plant layout, materials handling, inventory controls, or in value or quantity of materials weighed.

And misfit scales can bottleneck production, infect your weight records with costly errors, slow down materials handling, undermine inventory controls—product quality—customer goodwill!

Be sure your scales are not just 100% accurate, but 100% *adequate*, too. We will gladly arrange for an adequacy test to cover any or all of your scales. A few minutes at each weighing station will give you the facts on scale capacity and location, dial visibility, platform size and height and other factors that determine *scale adequacy*. Address: TOLEDO SCALE, Division of Toledo Scale Corporation, Toledo 12, Ohio.



1/3 actual size

NEW TOLEDO PRINTWEIGH "400"

Prints **complete** weight records on tickets or sheets, also on strips. Full-figure printing, even when unit weights are used. Positive weight identification, with selective numbering, weight symbols, or consecutive numbering. Time and date printing available. Transmits weight data for recording by remotely located office machines, if desired. Ask for Bulletin 2017.

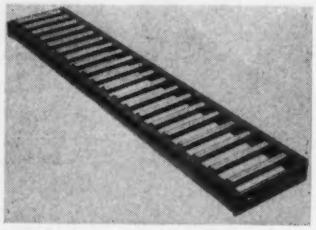
SERVICE Factory-Trained 240 Cities

TOLEDO®

Headquarters for Weighing Systems

6042 on Reader Service Slip.

lution of zinc compounds and epoxy resins. These react chemically when sprayed on metal surfaces, permanently bonding metal and finish.



Roller and wheel gravity conveyor sections, supports and accessories are corrosion-protected

Provided at no extra cost, the new protection is especially efficient at sheared and rolled edges, welded joints and punched holes, where corrosion often attacks.

("Galva-Finish" corrosion protection is standard feature on conveying equipment manufactured by The E. W. Buschman Company, Clifton and Spring Grove Aves., Cincinnati 32, Ohio.)
6043 on Reader Service Slip.

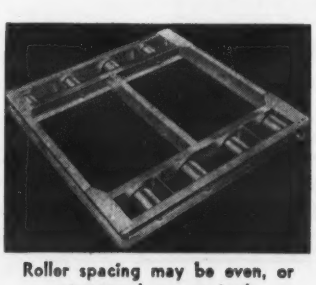
Magnesium dollies allow easy, one-man handling

Features: Pallet dollies of all-magnesium construction provide maximum strength at minimum weight (from 31 to 42 lb, depending on size), an important factor for easy, one-man handling.

Result is faster, more economical material flow in plant, warehouse or shipping dock.

Description: Dollies are fabricated of welded aluminum channels, and are fully stress-relieved. Other features in-

(*Continued on next page*)

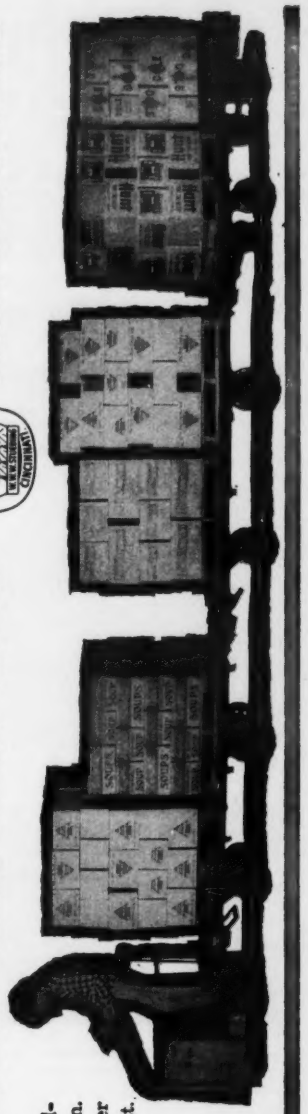


Roller spacing may be even, or staggered, as required

A TRUCK FOR EVERY PURPOSE AND MATERIAL

LIFT TRUCKS INC. CINCINNATI

Hydrolectric A GREAT NAME IN LIFT TRUCKS



This powerful Hydrolectric Tractor hauls one or multiple units with speed, safety and ease of operation. Features the exclusive DYNA-DUAL POWER UNIT. Power enough to pull loads of 6000 lbs. or more at low cost.

Write for Bulletin KT

LIFT TRUCKS, INC.
2409 Spring Grove Avenue, Cincinnati 14, Ohio

6044 on Reader Service Slip.

King

SHARP FREEZE SYSTEMS

increase hardening room capacity because they can be located anywhere

INSIDE *the room*
The Borden Company, Cedar Rapids, Iowa

OUTSIDE *the room*
H. P. Hood & Sons, Boston, Mass.

ABOVE *the room*
Oak Farms, Dallas, Texas

BELOW *the room*
Luick's Ice Cream, Milwaukee, Wis.

Over 60% of the nation's largest plants have found King Sharp Freeze Systems adaptable to their specific needs. King Systems feature fast, economical air defrost . . . each unit is defrosted 20 to 30 minutes, varying from once or twice a week to once a month. Reduced capacity periods before defrosting or interruption of normal operations during defrosting is entirely eliminated. *Let us show you how to reduce the cost of operating your hardening rooms.*

Write for free technical bulletin. More than 50 years experience is at your service.

SHARP FREEZE SYSTEMS

King COMPANY OF OWATONNA
911 North Cedar Street
Owatonna, Minnesota

6045 on Reader Service Slip.

material handling

(*Continued from preceding page*)

clude reinforced corners and 3½ in. diam rollers equipped with ball bearings and steel axles.

There are 14 standard models, in capacities of 2000 and 4000 lb. Special sizes are available on request.

(New, all-magnesium pallet dollies are manufactured by Magline Inc., 1900 Mercer St., Pinconning, Mich.)
6046 on Reader Service Slip.

Bulk trailer discharges sugar either of 2 ways

Pneumatically or by gravity

Uses-Features: More efficient handling and processing of orders are afforded through use of dual-purpose truck-trailer. Special trailer also permits greater sanitation in handling.

Sugar is loaded through three hatches on top of tank. Fifteen-ton load is discharged either pneumatically through hose located in rear, or by gravity through valve also located in rear.

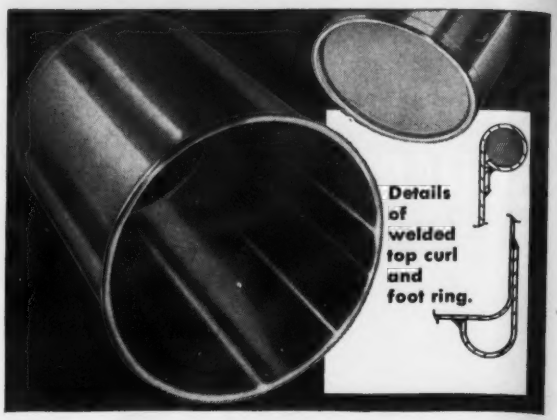
Six hatches at front of air intake chamber provide easy access for changing filters

Description: Gasoline engine, located behind hood at front of trailer drives hydraulic pump or air compressor.

Pump drives three-stage hydraulic hoist that elevates tank for unloading by gravity. For pneumatic discharge, compressor pulls air through three vertical filter chambers located at front of trailer.

Tractor is specially designed, has a six cylinder, 230 hp engine. Axles and major chassis components are coordinator for special trailer.

(Trailer is manufactured by Fuller Company, Subsidiary



Pass any sanitarian's scrutiny!

SEND FOR NEW BULLETIN 55

Hackney stainless steel food containers have a seamless cupped bottom section... crevice-free construction inside and out. Exceptionally strong, with open end curled over a steel reinforcing rod. Sturdy steel foot ring.

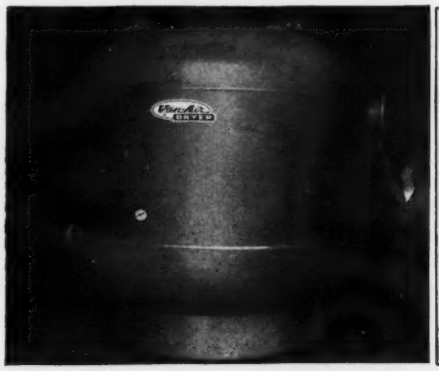
No container is easier to clean and keep clean. Sizes: 30 and 55 gallons. Covers available.

Hackney MILWAUKEE

Pressed Steel Tank Company
Manufacturer of Hackney Products
1459 South 66th Street, Milwaukee 14, Wisconsin
Branch offices in principal cities

CONTAINERS AND PRESSURE VESSELS FOR GASES, LIQUIDS AND SOLIDS

6047 on Reader Service Slip.



VAN-AIR DRYER (above) DRIES and CLEANS COMPRESSED AIR at rate of 6000-cfm—sufficient for ENTIRE PLANT. 28 other sizes of VAN-AIR Dryers COVER COMPLETE RANGE OF PNEUMATIC OPERATIONS down to 1-cfm.

COMPRESSED AIR DRYERS STERILIZE AIR for PROCESSING FOODS

Equipped with exclusive triple-desiccating chamber, VAN-AIR Dryers extract all water from compressed air—remove foreign particles and gaseous oils—destroy bacteria—reduce moisture below zero F dewpoint—operate WITHOUT heat, power, regeneration, injection or volume loss—perform continuously and automatically at the exceptionally low cost of

LESS THAN 1/16-CENT PER 1000 CU. FT.

At this low rate—under 1% of cost to compress air (national average)—VAN-AIR Dryers prevent freezing, corrosion, contamination, dilution—protect air lines, controls, tools, processes, instruments, chemicals, foods, drugs, spraying, blasting, finishing, packaging, etc. Can be installed outdoors. Will not freeze.

Van-Air DRYER

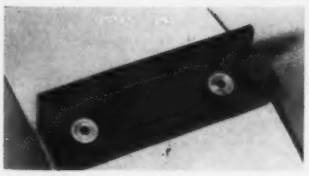
PLANT ENGINEERS—Look into the DOLLAR value and PENNY maintenance of Van-conditioned dry air—clean, pure, sterile. Ask for brochure with charts.

VAN PRODUCTS CO. ★ Engineers ★ Manufacturers
5737 SWANVILLE ROAD, ERIE, PENNSYLVANIA

6048 on Reader Service Slip.

of General American Transportation Corporation, 176 Bridge St., Catasauqua, Pa.)
6050 on Reader Service Slip.

(Tractor is a product of the Brockway Motor Co., Inc., 1949 Shira St., Cortland, N.Y.)
6051 on Reader Service Slip.



Low-cost rubber cleats for most conveyor belts

Rubber conveyor cleats that are easily installed with belt punch and screwdriver bolt securely to fabric, woven metal or chain belting of any width. (See above photo.)

Cleats come in black or white rubber, or in neoprene, in standard heights up to four in. Bolts and washers are of rust-proof material, and are countersunk to eliminate protruding surfaces for better sanitation and efficiency.

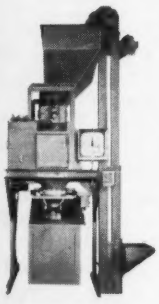
Special metal stiffeners for heavy-duty service are available.

(Rubber conveyor cleats are manufactured by Holz Rubber Company, Inc., 1129 S. Sacramento, Lodi, Calif.)
6052 on Reader Service Slip.

"After operating expenses and taxes, we cleared a small profit."

If you overweigh you lose money...
If you underweigh you lose customers!

Richardson Automatic Bagging Scales are the answer to this problem. They provide high speed bagging with accuracy that eliminates giveaway of product, avoids customer complaints of shortweights. Higher production speeds mean reduction in costs, too.



The Richardson E-50 Bagging Scale gives you all these benefits –

Accuracy – within 1 ounce at speeds of ten or more 50-lb. bags per minute!

Versatility – handles weighings from 5 to 200 lbs. of grains, plastics, powdered and granular chemicals, feeds and meals, pellets, sugar, salt, and many others.

Dependability—ruggedly-built for years of trouble-free service.

For full details on the Richardson E-50 and other bagging scales write today.

Richardson Scales conform to U.S. Weights and Measures H-44 for your protection.

Here's the answer...

Richardson

MATERIALS HANDLING BY WEIGHT SINCE 1902

RICHARDSON SCALE COMPANY • CLIFTON, NEW JERSEY

Sales and Service Branches in Principal Cities • Also manufactured in Europe to U.S. standards

6049 on Reader Service Slip.

LA PORTE

FLEXIBLE STEEL CONVEYOR BELTS

Fabricated from .047 Cold Rolled Galvanized Steel and reinforced with No. 12-gauge Galvanized Wire, these rugged La Porte Conveyor Belts are built to last under hard continuous use.

More than this, the flexible, open-mesh design, that permits the free circulation of air and liquids around products in process, withstands impacts at the receiving platform, loading hopper and shipping dock. It also meshes perfectly with the La Porte Sprocket to assure a positive drive, eliminating tracking problems. La Porte Belts retain their shape, are easily sterilized while in motion and require little maintenance.

If you freeze, can, dehydrate, pickle, package, store or ship food, it will pay you to use La Porte Belts. Available in ½" x 1", or 1" x 1" in any length and practically any width. Ask your mill supplier or mail coupon for illustrated literature and prices.

MAIL COUPON TODAY

LA PORTE MAT & MFG. CO.
Box 124 Dept. A
La Porte, Indiana

Please send free literature on your Conveyor Belt.

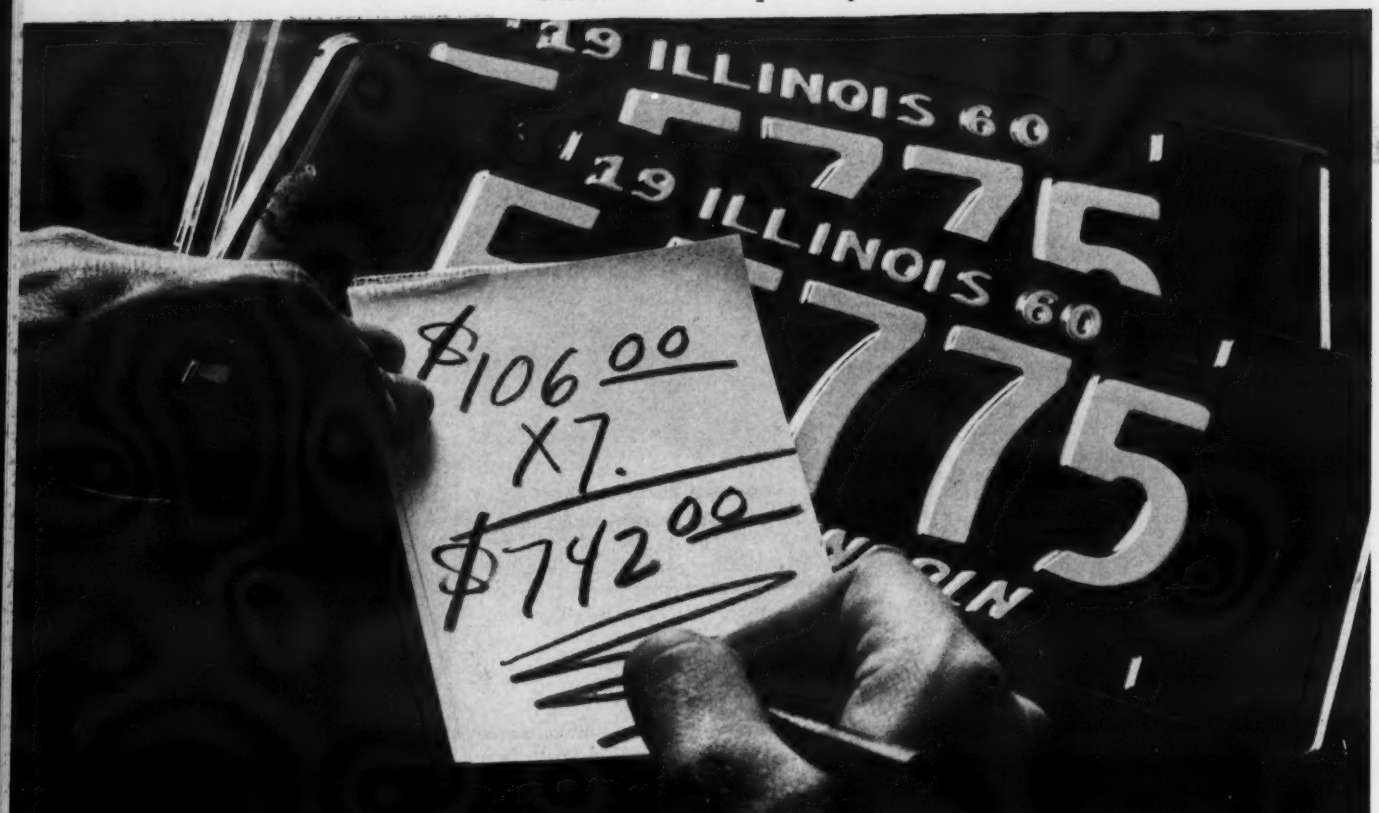
NAME_____

ADDRESS_____

CITY_____ STATE_____

6053 on Reader Service Slip.

"Ouch! License plates for 7 trucks come to $742!"



Lease your truck fleet from Hertz

NO STATE LICENSES TO BUY... NO UPKEEP... NO INVESTMENT

You're "exempt" from annual state license costs . . . and many other problems, when you *lease* trucks from Hertz. You get new custom-engineered GMC, Chevrolet or other sturdy trucks . . . or we'll buy your present trucks, rebuild them if necessary, and lease them back to you.

Hertz is America's No. 1 truck lessor, with over 500 truck locations in the U. S. and Canada. Trucks are supplied to you faster, serviced by crack night crews. Hertz gets you out of the truck business, back into your *own* business . . . cuts fleet problems to the writing of one budgetable check per week.

And you can rent Hertz trucks for peak periods.

Call your local Hertz office. Or write for this

fact-filled truck lease booklet, to Hertz Truck Lease, Dept. F12, *218 S. Wabash, Chicago 4, Illinois.*

6054 on Reader Service Slip.

Association News

National Preservers Assn.

Washington, D. C., announces appointment of Evan L. Rhoads as technical consultant to the association, succeeding the late C. R. Zimmermann. Rhoads has been identified with the preserve manufacturing industry since 1923, and is one of the principal authors of the world-renowned "Preservers Handbook."

The Refrigeration Research Foundation

has honored Dr. H. C. ("Dutch") Diehl, its former and original director, with honorary life membership in the Foundation. This is only the second such membership awarded in the Foundation's 15-yr history.

Borden Company's Western Division

San Francisco, embracing all Borden's dairy and food operations in the Western states, has a new board chairman — G. F. Morrill. L. S. Merrill, a division vice president, succeeds Morrill as president of the division.

Institute of Sanitation Management

has elected the following as officers of its Food Processing Division: chairman, Lloyd Fox of Sunkist Growers, Inc.; vice-chairman, Vincent Barnes, Hawaiian Pineapple Co., Ltd.; secretary, Harold B. Richie of Swift & Co.; councillor, James W. Bell of National Canners Assn.; councillor, Fred R. Frohnerath, H. J. Heinz Company.

American Meat Institute Foundation

Chicago, has received a grant of $11,500 in support of bacteriological research from the National Institute of Health. Research studies relating specifically to the metabolism of the enterococci (spoilage microorganisms) already are being conducted under supervision of Dr. C. F. Niven, Jr., AMIF associate director of research and education, and Robert H. Deibel of the Foundation's division of bacteriology.

Big step toward 'greaseless car'

New fiber bearings go 50,000 miles without grease

New type ball joint suspension bearing and steering linkage bearing needed no lubrication during test period between October 1958 and June 1959, although the six 1958-model taxicabs in which they were installed covered 50,000 miles each.

During this same period, other cabs in the test fleet, with conventional bearings, had to be greased 36 times.

Bearings in the cabs which ran without greasing were lined with a woven fabric of "Teflon" TFE-fluorocarbon fiber, known to be literally slipperier than ice, as well as the most chemically resistant fiber known.

Per-cab lubrication savings during the test amounted to $54. Projecting these results to average passenger-car life, a potential saving approximately equaling this might be expected — based on 30 grease jobs at $1.75 per greasing.

Aside from money saving, an important human advantage was shown. Drivers commented repeatedly on the improved ride and handling performance of taxis equipped with fiber bearings. They felt noticeably less tired at the end of each driving day.

The drivers' reports were confirmed by objective tests using instruments to measure wheel motion or "fight," and chassis up-and-down motion — both of which cause driver fatigue even on smooth roads.

Another advantage — the non-lubricated fiber bearings did not squeak when wet.

(Experimental fiber bearings used in the test reported were manufactured by Inland Manufacturing Division of General Motors Corporation, using "Teflon" TFE-fluorocarbon fiber, a development of E. I. du Pont de Nemours & Company, Wilmington, Del.)
6055 on Reader Service Slip.

(Above) Dundas Producers Ltd., Dundas, Ontario, processes 1800 birds per hour.
(Below) Butler's clear-span design gives this plant an ideal flow plan.

These modern Butler processing plants cost less than you'd think!

A Butler Building is a "natural" for modern, straight-line processing. You'll erect a far superior building, increase your plant capacity, efficiency, and meet USDA inspection law requirements. And you'll do it for less money, too.

You see, Butler pre-engineered buildings are half-finished before you sign the order. Initial planning and engineering time and investment are minimized. Components go up in record time. You'll get into your new plant—and get into production—weeks to months sooner.

Butler's clear-span interiors—up to 120' wide—provide the unobstructed floor and overhead space you need for straight-line flow of materials. This post-free and truss-free design allows you to install overhead conveyors with complete freedom. And economical partitions can be used to separate receiving, killing, and eviscerating areas of the building.

Butler metal roof and wall panels are easy to clean, require virtually no maintenance. Precision-fabricated to fit tightly, they seal out weather, vermin, and rodents. Excellent ventilation, illumination, and climate control are "built-in" features of Butler Buildings.

For the full story on Butler buildings, call your nearby Butler Builder. Ask about Butler financing, too. He's listed in the Yellow Pages under "Buildings" or "Steel Buildings." Or write direct.

BUTLER

BUTLER MANUFACTURING COMPANY
7479 East 13th Street, Kansas City 26, Missouri

Manufacturers of Metal Buildings • Equipment for Farming, Oil Transportation, Outdoor Advertising • Contract Manufacturing

Sales offices in Los Angeles and Richmond, Calif. • Houston, Tex. • Birmingham, Ala. • Kansas City, Mo. • Minneapolis, Minn. • Chicago, Ill. • Detroit, Mich. • Cleveland, Ohio • Pittsburgh, Pa. • New York City and Syracuse, N.Y. • Boston, Mass. • Washington, D.C. • Burlington, Ontario, Canada

6056 on Reader Service Slip.

Handy slide-rule device gives shippers assurance that loading is 'on level'

Problems connected with levelness of freight-car load — desired because level loads arrive at destination in better condition — now can be solved quickly by using a slide-rule device developed by a major railroad.

Device permits shippers of canned foods and other similarly packaged products to determine ideal height elevation and/or number of layers for various case sizes to be loaded in three basic car lengths — "standard refrigerator," 40½-ft-long cars and 50½-ft-long cars — regardless of complexity of the shipping order.

Slide rule solves shipping order problems of straight carloads of one case size, or carloads of varying quantities of different case sizes.

Its use is expected to eliminate the so-called "step down" method which has been so damaging to portions of shipments moving on to intermediate or final destination.

("Calc-U-Layer" slide rule is available from Union Pacific Railroad Company, General Claims Dept., 1416 Dodge St., Omaha 2, Nebr.)
6057 on Reader Service Slip.

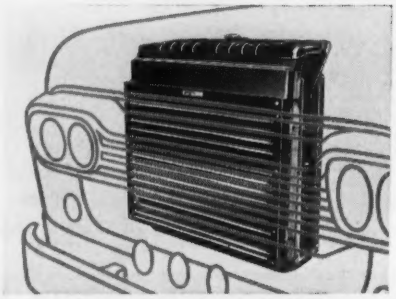
Describes ultra-sanitary bulk hopper car

New Dry-Flo Car provides economical bulk transportation for many dry materials, including high-grade commodities where freedom from contamination is necessary.

Bulletin describes and illustrates construction features which provide protection against contamination, as well as others which permit very rapid and easy unloading, with metered flow, if desired.

("The Dry-Flo Car," 4-page bulletin, and 1-page technical sheet is available from General American Transportation Corporation, 135 S. La Salle St., Chicago 90, Ill.)
6058 on Reader Service Slip.

NOW! Certified Durability



CLOSER TEMPERATURE CONTROL obtained with automatic radiator shutters means longer engine life, more efficient operation. Temperature variation between 167° and 187° with shutters as compared to 102° to 181° without shutters was reported and certified in loaded vehicle road tests.

LONGER WIRING HARNESS LIFE is the direct result of Ford's greatly improved electrical wiring system for 1960. Ford's '60 wiring harness and the 1959 wiring harness were subjected to shaker table tests plus constant exposure to oil and water vapors, and temperatures of 200°. Certified test results show a threefold increase in 1960 wiring harness life.

INCREASED FUEL PUMP RELIABILITY is an added benefit from Ford's submerged-type electric fuel pump. Certified results of dynamometer tests showed no vapor lock with Ford's electric pumps at temperatures up to 200°, whereas incipient vapor lock with mechanical fuel pump resulted in a power loss of 9% under same conditions.

It's a fact! Numerous reports from high-mileage operators of Super Duty Trucks attest to Ford's outstanding durability. Studies by an independent research firm provide certified proof that these models are even more durable for 1960.

Ford Super Duty Trucks have earned a reputation for exceptional performance and durability since their introduction two years ago. Shop service records of many leading fleets show Super Duty tractors with mileage readings between 150,000 and 250,000 and no repairs other than normal maintenance. Similar testimony to the dependability of these Big V's by other satisfied users is being added each month. Is it any wonder that '59 sales of these units were more than double those of 1958?

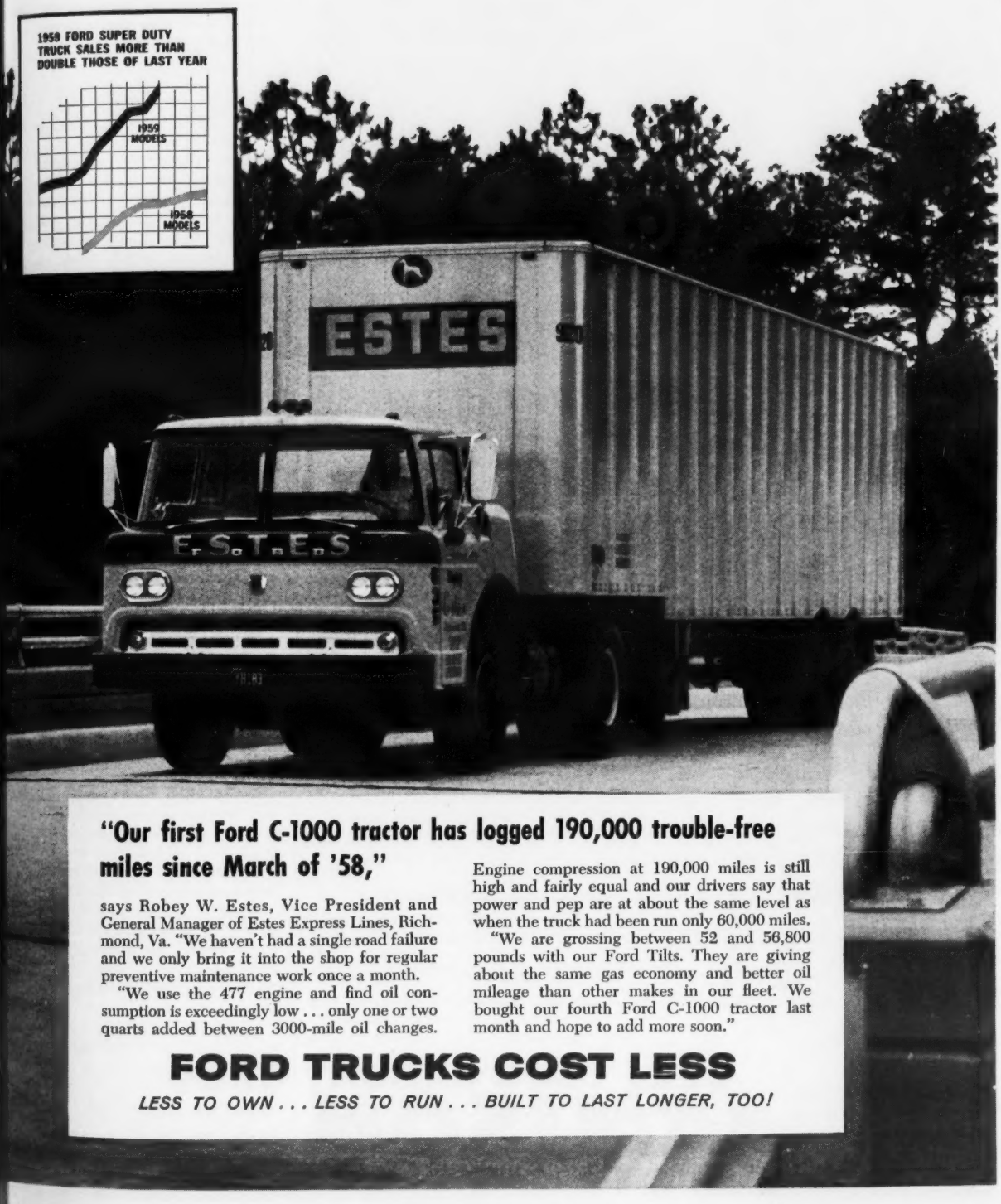
And for 1960, the Ford Super Duties offer additional refinements. Bigger optional axles and increased GVW's to permit greater payloads and more profitable operation. Automatic radiator shutters to keep the engine temperatures within the most efficient operating range, improved submerged-type electric fuel pumps to prevent vapor lock, and redesigned wiring for more reliable operation are typical of the improvements to be found in these units.

The changes offered for 1960 were tested and evaluated by a leading research organization. Certified results of the studies by this impartial firm (name available on request) provide proof that Ford's Super Duty Trucks are even more dependable.

- **Certified Durability through closer temperature control!** Independent research engineers certify that Ford's thermostatically controlled radiator shutters kept water temperature between 167° and 187° in severe mountain grade operation. The test truck with shutters blocked open under same operating conditions had a temperature range from 102° to 181°. The temperature variation of only 20° with shutters means less expansion and contraction in block and heads. Higher, more constant temperatures permit oil to circulate more freely, reducing internal friction. All these factors contribute to longer engine life.
- **Certified Reliability with longer-lived electrical system!** Thicker insulation on wires resists deterioration by heat, oil and gasoline. Asphalt-impregnated loom and plastic-coated mounting clips protect against abrasion. Certified results prove that the 1960 wiring harness has three times longer life.
- **Certified Reliability with Ford's submerged-type electric fuel pump!** Dynamometer tests of engines with submerged-type electric fuel pump and conventional mechanical type showed that vapor lock was non-existent with Ford's electric pumps at temperatures up to 200°, whereas incipient vapor lock with mechanical pump resulted in a power loss of 9% at an underhood temperature of 200°.

Endurance tests were run on alternators, two-speed axle speedometer adapters and other related components with similar results. Get all the facts at your Ford Dealer's now!

in Ford Super Duties!



"Our first Ford C-1000 tractor has logged 190,000 trouble-free miles since March of '58,"

says Robey W. Estes, Vice President and General Manager of Estes Express Lines, Richmond, Va. "We haven't had a single road failure and we only bring it into the shop for regular preventive maintenance work once a month.

"We use the 477 engine and find oil consumption is exceedingly low . . . only one or two quarts added between 3000-mile oil changes. Engine compression at 190,000 miles is still high and fairly equal and our drivers say that power and pep are at about the same level as when the truck had been run only 60,000 miles.

"We are grossing between 52 and 56,800 pounds with our Ford Tilts. They are giving about the same gas economy and better oil mileage than other makes in our fleet. We bought our fourth Ford C-1000 tractor last month and hope to add more soon."

FORD TRUCKS COST LESS

LESS TO OWN . . . LESS TO RUN . . . BUILT TO LAST LONGER, TOO!

6059 on Reader Service Slip.

Publish first truck-trailer refrigerating standard

A basis for rating both high-temperature and low-temperature refrigeration units used in refrigerated trucks and truck-trailers is provided by newly published standard of Air-Conditioning and Refrigeration Institute.

Purpose is to provide a specification of what constitutes minimum standard equipment, rating requirements, methods of testing and proper marking in terms of Btu per hr for speed-governed transport refrigeration units employing forced-circulation air coolers.

(A speed-governed unit is defined as a unit whose drive is designed to operate at a governed (constant), although possibly adjustable, speed.)

Work is underway by ARI on a second equipment standard covering hydraulic-drive and other types of variable-speed units, as well as on a third "application" standard to relate standard ratings and other performance characteristics of both types of units to a certification program.

When this is completed, ARI will establish a voluntary certification program based on the standards.

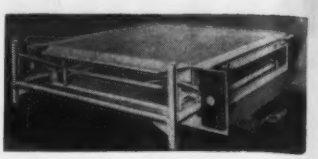
ARI Standard 1110-59, "ARI Standard for Speed-Governed Transport Refrigeration Units Employing Forced-Circulation Air Coolers," eight pp, is available at 75 cents per copy from Air-Conditioning and Refrigeration Institute, 1346 Connecticut Ave. N.W., Washington 6, D.C.

Equips docks to receive high- or low-bed trucks without loss of dock area

Uses: Automatic loading ramp can be used in existing facilities or new construction, and can either be recessed into loading dock floor or set on legs in front of dock.

Features: Fully truck-activated, this hinged ramp automatically adjusts to truck bed height without use of bulky, costly hydraulics or

(*Continued on next page*)



Set of four legs attached to frame make ramp a free-standing unit where shallow pit is impractical

(*Continued from preceding page*)

"jury-rigged" counterweights or counterbalances.

Since ramp is supported flush with level of dock floor, cross-traffic service is possible when ramp is not in use.

Description: Ramp is built like a bridge, which floats on a stout spring-scissor mechanism known as the "center-poise shock absorber."

When truck backs against the arms of the tubular push-frame, the elevator toggle is cycled, raising the ramp a full 16 in. above dock level.

Ramp will serve carriers from 16 in. above to 10 in. below dock level, regardless of dock height

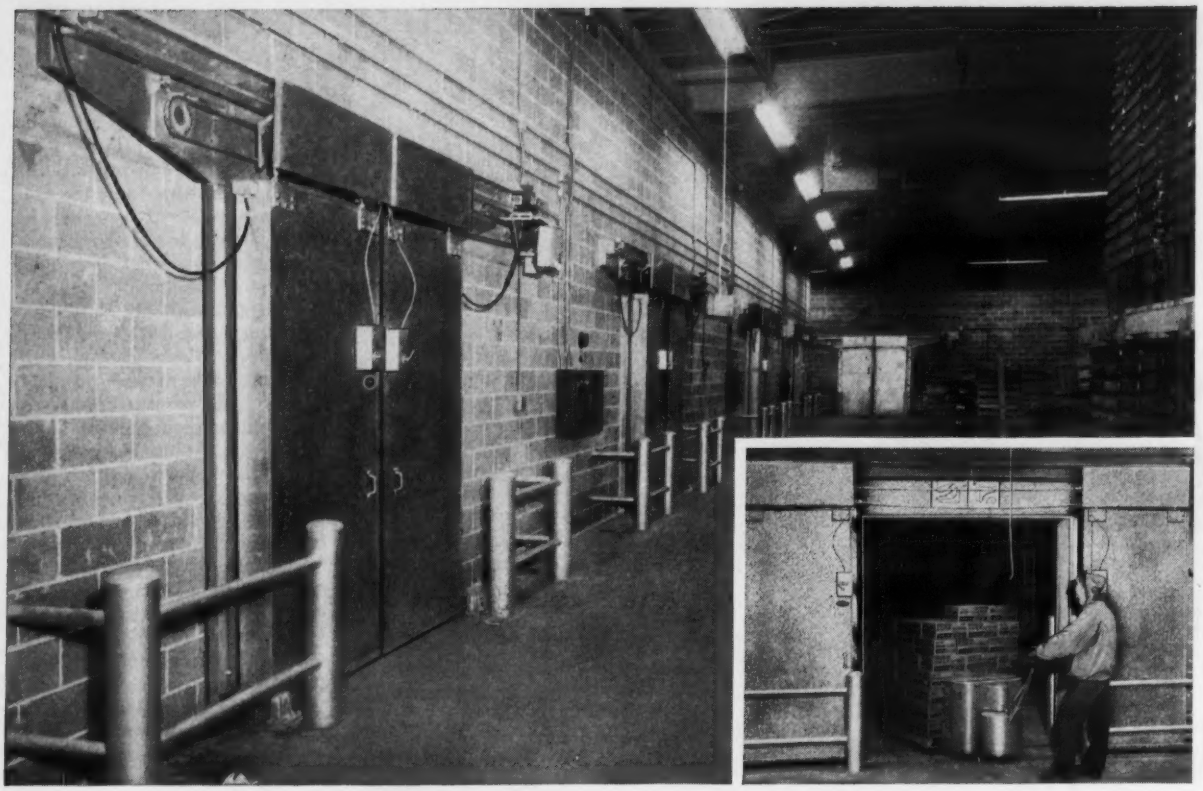
Ramp dwells momentarily at this height as truck continues backing, moving under ramp lip. Truck's backward motion is stopped by two large rubber bumpers secured to steel frame flanges that butt against dock.

Ramp then floats down on the center-poise shock absorber until its lip settles on truck bed — bridging the gap and providing an easy grade between truck and dock.

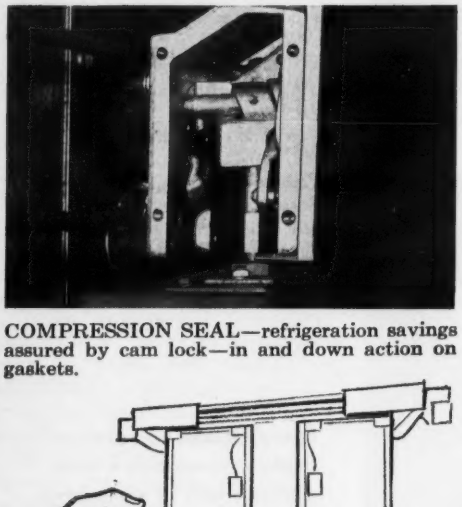
When truck leaves, two powerful recoil springs in elevator frame automatically return ramp to a safe, cross-traffic position. No attendant is needed.

Built of steel throughout, ramp has axle load capacity in any position and direction of 20,000 lb — far in excess of normal requirements.

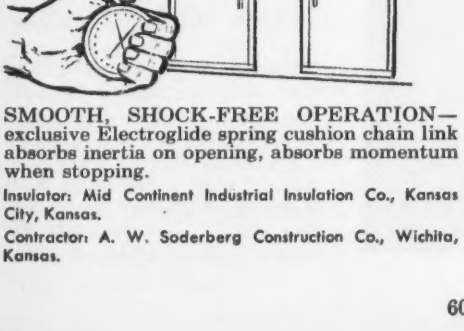
(Automatic loading ramp is manufactured by American Dockbridge, Inc., 235 W. Oklahoma, Milwaukee 7, Wis.) 6062 on Reader Service Slip.



9 Jamison Electroglide® Doors handle heavy traffic—save refrigeration



COMPRESSION SEAL—refrigeration savings assured by cam lock—in and down action on gaskets.



SMOOTH, SHOCK-FREE OPERATION—exclusive Electroglide spring cushion chain link absorbs inertia on opening, absorbs momentum when stopping.

Insulator: Mid Continent Industrial Insulation Co., Kansas City, Kansas.

Contractor: A. W. Soderberg Construction Co., Wichita, Kansas.

• In Wichita, Kansas, at the big Safeway Cold Storage Warehouse, nine Jamison Electroglide Power Operated Cold Storage Doors demonstrate how they permit high volume, high speed warehouse operation.

Exclusive Jamison features of the Electroglide assure fast, positive operation with safety to personnel.

LEVEL RIDE—opening and closing without gasket wear or drag.

RANGE OF TYPES—available bi-parting and single leaf left or right hand operation.

PADLOCK WITH SAFETY—emergency inside release.

MANUAL OPERATION—possible when power is off.

For Electroglide bulletin—Write Jamison Cold Storage Door Co., Hagerstown, Md.

JAMISON
COLD STORAGE DOORS

6061 on Reader Service Slip.

technical literature

Classified Listing

- **Equipment**
- **Ingredients**
- **Supplies**

Starred* items below have been more extensively reviewed elsewhere in the magazine. Key numbers in the last line will help locate these reviews, which are numbered in sequence. Items followed by dagger indicate literature offered by current advertisers — see index, page 111.

Management, Administration

"Labor Looks at Automation"*, 28 pp, AFL-CIO
5914 on Reader Service Slip.

Processing Equipment, Accessories

Distributes steam in zones for better solution heating*, 8 pp, (Bul PD-1) Tranter Mfg., Inc. Platecoil Div.
5952 on Reader Service Slip.

Higher operating efficiency with double-rotor impact mill*, 4 pp, (Brochure) Safety Industries, Inc. Entoleter Div.
5944 on Reader Service Slip.

Milk centrifuging without foaming*, 4 pp, (Bul S. A1098-11-58) De Laval Separator Company
5941 on Reader Service Slip.

Continuous, self-cleaning centrifuge*, 8 pp, (Bul 2177) Centrico, Inc.
5932 on Reader Service Slip.

Cleans grains up to 6000 lb/hr†, (Bul F-16) The Bauer Bros. Co.
6063 on Reader Service Slip.

Nine basic weaves of wire cloth in any metal†, 94 pp, (Cat) The Cambridge Wire Cloth Co.
6064 on Reader Service Slip.

Diaphragm pumps have no mechanical linkage†, (Cat) Dorr-Oliver, Inc.
6065 on Reader Service Slip.

Minimum floor space for packaged air compressors†, (Bul WB-10) Gardner-Denver Co.
6066 on Reader Service Slip.

Custom-built and standard cookers and kettles†, (Cat) Hamilton Copper and Brass Works, Div. of Brighton Corp.
6067 on Reader Service Slip.

Pumps from 1/100 to 500 gpm with pressures up to 1000 psi†, (Bul 30-FP) Robbins & Myers, Inc.
6068 on Reader Service Slip.

Mobile freeze-dryer preserves and dehydrates†, (Cat) Scientific Products, Div. American Hospital Supply Corp.
6069 on Reader Service Slip.

Spray nozzles control particle size and impact†, (Cat 24) Spraying Systems Co.
6070 on Reader Service Slip.

More refrigeration in less space with ammonia compressor and liquid transfer units†, (2 Bulletins) The Vilter Manufacturing Co.
6071 on Reader Service Slip.

Splits dry, free-flowing material into two to eight streams, 2 pp, (Bul 137-C) Sprout, Waldron & Co., Inc.
6072 on Reader Service Slip.

Gearless pellet mill has hinged die casings, 4 pp, (Bul 165-B) Sprout, Waldron & Co., Inc.
6073 on Reader Service Slip.

Higher protein value and greater yield with low-temp fish meal dryer, 8 pp, (Bul 596) Standard Steel Corporation
6074 on Reader Service Slip.

Wide-field hinged plate magnet, 8 pp, (Bul 1074) Stearns Magnetic Products
6075 on Reader Service Slip.

Vibrating screen separators have motion in three directions, 4 pp, (Bul) Southwestern Engineering Co.
6076 on Reader Service Slip.

Theory and application of industrial homogenization, 6 pp, (Bul H-55) Manton-Gaulin Mfg. Co.
6077 on Reader Service Slip.

Illustrates and describes 12 types of vibrating screens, 48 pp, (Book 2777) Link-Belt
6078 on Reader Service Slip.

Heavy-duty, V-vertical air compressors, 24 pp, (Bul A-62) Joy Manufacturing Co.
6079 on Reader Service Slip.

Multi-pass, shell-and-tube refrigeration condensers, 12 pp, (Bul 232-J) Frick Company
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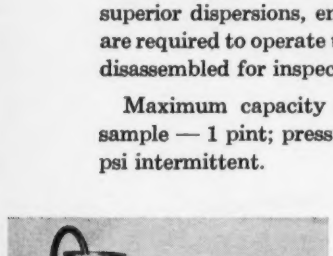
...and see for yourself how Gaulin Particle Control improves product quality and reduces costs

Now, for a few dollars per day, you can have a laboratory homogenizer in your plant to explore the advantages of Gaulin Particle control on your product . . . to produce superior dispersions, emulsions or blend. No special skills are required to operate the machine. It is quickly and easily disassembled for inspection and cleaning.

Maximum capacity is 15 gph; minimum processable sample — 1 pint; pressures to 8000 psi continuous, 10,000 psi intermittent.

Remember, the rental cost is applicable against the price of the machine.

Write for more information and bulletins on the Gaulin Laboratory Homogenizer LH-55, Sub-Micron Disperser SMD-55, Homogenizers H-55.



Gaulin RE* Two-Stage colloid Mill — Model 2A — is available for processing quantities as small as 8 ounces, and is invaluable for research, laboratory or pilot plant applications. Also available on rental basis.

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new literature

Processing

Accurately feeds and controls from ounces to tons per hour, 6 pp, (Bul VB-10-1) Eriez Mfg.
6083 on Reader Service Slip.

Design and process advantages of semi-continuous deodorizers, 6 pp, (Lit) Chemetron Corp., Girdler Process Equipment Div.
6084 on Reader Service Slip.

Ingredients, Food Additives

Milk products for added flavor and color†, (Technical information and working samples) Western Condensing Company
6085 on Reader Service Slip.

Additive used as fixative for vanilla flavors†, (Samples and literature) Givaudan Flavors, Inc.
6086 on Reader Service Slip.

Packaging, Labeling, Cartoning

High-speed filler for granulars, powders, liquids, pastes*, 4 pp, Bartelt Engrg. Co.
6087 on Reader Service Slip.

Keeping wire stitchers operating smoothly†, (Bul AD-154) Acme Steel Products Div., Acme Steel Co.
6088 on Reader Service Slip.

Extra profits with aerosol packaging†, (2 Buls) Air Reduction Co., Inc.
6089 on Reader Service Slip.

". . . and one for the pot."

Scales that are adequate as well as accurate†, (Bul 2017) Toledo Scale, Div. Toledo Scale Corp.
6090 on Reader Service Slip.

Corrugated boxes that carry a message†, (Booklet) Union Bag-Camp Paper Corp.
6091 on Reader Service Slip.

How coordinated specialists produce corrugated packages, 6 pp, Hoerner Boxes
6092 on Reader Service Slip.

"Now I know what that slot in its back was for."

Bulk Handling, Accessories

Efficiency with versatility for bulk food handling†, (Book) Stephens-Adamson Mfg. Co.
6093 on Reader Service Slip.

Design and application of bulk-handling pneumatic equipment†, (2 Bulletins) Sprout, Waldron
6094 on Reader Service Slip.

Mechanical bulk handling and storage cuts handling costs, storage space†, (Bul MU-100) A. O. Smith Corp.
6095 on Reader Service Slip.

Conveyors, Racks, Accessories

Waterproof belting for washing and sorting†, (Manual) Buffalo Weaving and Belting Co., Inc.
6096 on Reader Service Slip.

Conveyor chain for bottles, cans or cartons†, (Pamphlet) Fenco, Inc.
6097 on Reader Service Slip.

Gentle-action elevating, lowering conveyor for small cartons, 2 pp, Lynch Corp.
6098 on Reader Service Slip.

Thomas J. Lipton, Inc., Needed Good Port, Rail And Trucking Facilities For Its New Plant

$3,000,000 LIPTON PLANT, on 14-acre tract, has 172,000 sq. ft. of floor space, employs 250 people. Air-conditioned, automated, it is most modern of its type in the world. Tea is untouched by human hands. Plant's yearly output would make three billion cups of tea.

VIRGINIA'S STRATEGIC LOCATION permits Lipton to distribute economically north and south along the entire Atlantic coast and through the midwest. Rail and trucking facilities at plant are excellent.

ABUNDANT ELECTRIC POWER was a factor in Lipton's choice of Virginia. Among other reasons were, "the favorable impression that the community made on company officials and the type of labor available."

VIRGINIA suited Lipton to a T-ea!

When Thomas J. Lipton, Inc., decided to build a new processing plant, they spent months studying plant sites. Result: Virginia met their requirements to a T-ea!

At Suffolk, Virginia, Lipton imports 10,000,000 to 15,000,000 lbs. of tea annually through the giant port of Hampton Roads. With approximately 8,500 sailings a year, Hampton Roads has some 300 piers, docks and wharves . . . 10,000,000 square feet of warehouse and transit sheds . . . the most modern loading and unloading facilities for cargoes of every sort. In distributing throughout the eastern half of the nation, Lipton is aided by Virginia's fine network of railroads and 50,000 miles of primary and secondary highways.

Of the move to Virginia, Lipton stated publicly, "We like your wide-awake spirit and the way you encourage industry. Lipton is happy to be here."

If you're planning a new plant, let us tell you why so many companies are locating in Virginia. Phone, wire, write, or visit in complete confidence . . .

C. M. Nicholson, Jr., Commissioner
Division of Industrial Development
Virginia Dept. of Conservation and Economic Development
State Office Bldg., Richmond, Va.
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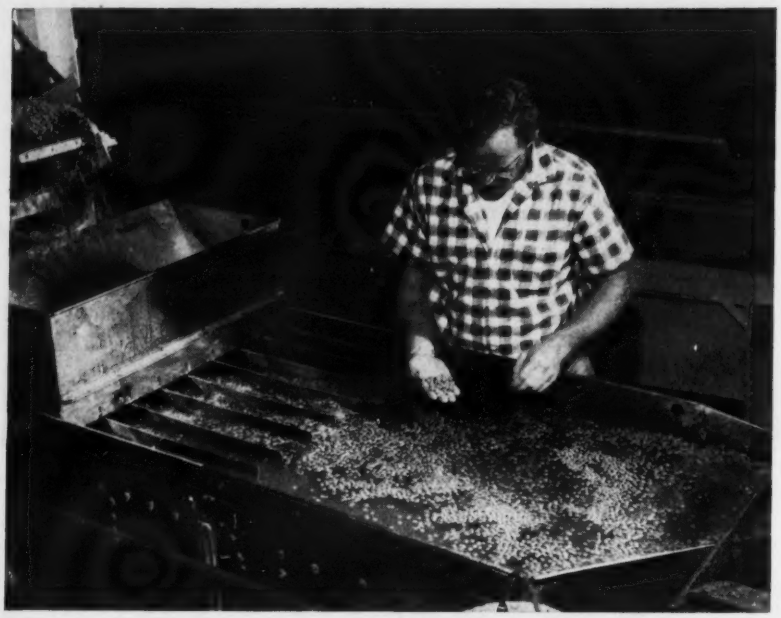
SILICONE NEWS from Dow Corning

All Product...No Foam



Dow Corning Silicone Defoamers Keep Production in High Gear

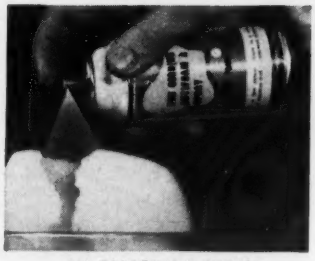
Peak season processing of beans, peas, carrots and other vegetables – pickles and fruit, too–can't wait on foam. That's why more and more food processors are using Dow Corning silicone defoamers to keep foam under control at all times.

Whether yours is vegetable processing or some other phase of the food industry, foam robs you of production space, slows processing, increases maintenance, causes boil-overs and waste — may even create fire hazards!

IN FREEZING MIXES

Stop foam before it starts. Easy to use, fast-acting Dow Corning silicone defoamers won't contaminate your products . . . are completely safe in packaging and processing. Dow Corning Antifoam A may be used in nonstandard foods at concentrations to 10 ppm; and water-dilutable Antifoam AF Emulsion at concentrations to 34 ppm.

A generous trial sample is yours for the asking. Write for this FREE SAMPLE, indicating your foaming problem and whether your system is aqueous or oil. Address Dept. 5724 for prompt reply.



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new literature

Shipping Containers, Palletizing

Tractor for pallet train†, (Bul KT) Lift Trucks, Inc.
6101 on Reader Service Slip.

Fork Trucks, Accessories

Line of rider trucks, tractors and narrow-aisle electrics; "walkies" and manual equipment, 16 pp, (Cat 80-204) Lewis-Shepard
6102 on Reader Service Slip.

Low-cost handling with "walkie"-type low-lift pallet trucks, 4 pp, Moto-Truc Co.
6103 on Reader Service Slip.

Over-the-Road Trucks

No licenses to buy when you lease trucks†, (Booklet) Hertz Truck Lease
6104 on Reader Service Slip.

Controls, Regulators, Indicators

Liquid level controls have no moving parts in liquid†, 32 pp, (Cat) Charles F. Warrick Co.
6105 on Reader Service Slip.

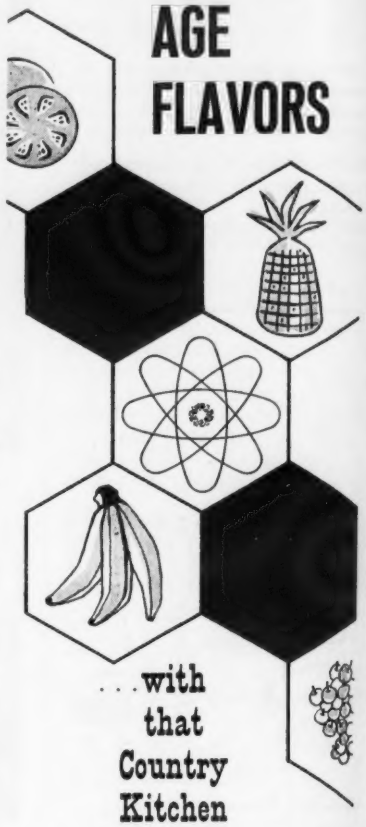
Automatic controls for many applications†, (14 Buls) Lumenite Electronic Co.
6106 on Reader Service Slip.

Continuous determination of sugars down to ppm, 2 pp, (Data sheet) Technicon Controls, Inc.
6107 on Reader Service Slip.

VOTE FOR YOUR FAVORITE CARTOON

See this month's "FP Hall of Fame Cartoon" on page 108, and then vote for large reproduction of your favorite on the Reader Service Slip.

SPACE AGE FLAVORS



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This is the day of jet-flight and dehydrated potatoes; atomic energy and frozen bread; super-sonic speed and "quicker-than-instant" mixes for everything from soups to desserts. This is the threshold of the space age and the era of convenience foods. Flavors for these modern foods must be as dynamic as the technology of their formulation . . . as carefully designed as the science that developed them. Yet, these space-age foods must still retain that home cooked taste. Only a company that keeps thoroughly abreast of the newest developments in food can give you this kind of "built for the product" flavor. Fries & Fries provides you with space-age flavors with that country kitchen taste! Let our laboratories show you what dynamic flavor research means.

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Electronic indicating recorders and indicating recorder-controllers, 4 pp, (Bul 66) Thermo Electric Co.
6109 on Reader Service Slip.

Laboratory Instruments, Accessories

Fraction collectors and pressurized chromatography systems, 6 pp (Cat Supplement LKB-AB-59) Ivan Sorvall
6110 on Reader Service Slip.

Centrifuges and laboratory instruments, 12 pp, (Cat GC-ABF-59) Ivan Sorvall
6111 on Reader Service Slip.

Instruments and equipment for research, control, production 16 pp, (Cat 59A) Custom Scientific Instruments, Inc.
6112 on Reader Service Slip.

Customer service laboratory for developing process techniques, 4 pp, J. H. Day Company
6113 on Reader Service Slip.

Sanitation

Cleaning and sanitizing food processing facilities†, (Bul) Oakite Products, Inc.
6114 on Reader Service Slip.

Flexible volumetric feeders†, (Booklet) Wallace & Tiernan Incorporated
6115 on Reader Service Slip.

Slide rule for 'calculating' best metal for corrosive chemicals, 1 p, (Chart) Hoke, Incorporated
6116 on Reader Service Slip.

Manual and motorized floor sweepers, 4 pp, (Cat 59451) Parker Sweeper Co.
6117 on Reader Service Slip.

Maintenance

Selecting loading valves and assemblies*, 2 pp, (Bul JF-49) OPW-Jordan
5965 on Reader Service Slip.

Properly fitting roller bearings to the job*, 36 pp, (Cat 59A) Chain Belt
5972 on Reader Service Slip.

Power transmission with timing belts*, 4 pp, (Cat 20B8760) Allis-Chalmers Mfg. Co.
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Lubricant for many applications†, (Data Book) Lubriplate Div., Fiske Brothers Refining Co.
6118 on Reader Service Slip.

Mortar-cements that resist chemical attack*, 12 pp, (Bul 5-2) Atlas Mineral Products Co.
5969 on Reader Service Slip.

Five standard lines of spring clutches, 28 pp, Curtiss-Wright Corp.
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USE THESE NEW SMOKED YEASTS FROM VICO . . . .

Give a sweet, natural hickory smoke flavor to canned, baked, frozen foods—perfect as a masking flavor for pet foods, pharmaceuticals, other specialties.

Both Hickory Smoked Brewers' Yeast and Hickory Smoked Torula Yeast have been added to our line of KATER brand hickory smoked products. Both the Brewers' Yeast and the Torula Yeast are *naturally* hickory smoked to a high flavor level, yet they cost less than ordinary smoked yeasts.

High in protein, non-fermentable and highly palatable, they give a delicious, meaty smoked flavor to other foods.

KATER Hickory Smoked Yeasts, dried at temperatures above pasteurization, are acceptable under all regulations of the U.S. Food, Drug and Cosmetic Act, as amended. Approved for certain applications in federally inspected meat plants.

Smoked-flavored food products are big business—get your share! If you process canned meats, soups, stews, sauces, baked goods, prepared mixes, dressings, frozen pre-cooked or prepared foods, pharmaceutical, pet foods, or other specialties, ***WRITE FOR FREE SAMPLE ON YOUR LETTERHEAD.***

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Manufacturing chemists for the food and pharmaceutical industries

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SA—streamlined balloon jacket design. Extra large diameter provides greater heating surface. Sizes 15 to 500 gallons. Constructed for steam working pressures of 40, 90 and 125 pounds.

SA MIX COOKER—has single or double motion agitator with or without hydraulic lift. Agitator lifts easily and smoothly out of cooker. Sizes 30 to 500 gallons.

CW—designed to process batches up to 150 gallons. Positive worm gear. Handwheel gives control of capacity loads while tilting. Large diameter kettle gives fast even cooking.

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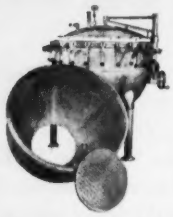
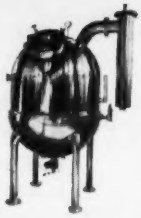
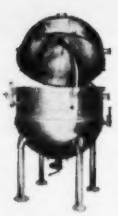
. . . IN HAMILTON SPECIAL OR STANDARD KETTLES ASSURES LOWER PROCESSING COSTS



PC—stainless steel pressure cooking kettle for meat and poultry processing. 90 p.s.i. in jacket and 15 p.s.i. in kettle. Quick opening latches. Top is lifted by eccentric lever. Sizes 30 to 250 gallons.



HV—vacuum cooker from 150 to 500 gallons. Hinged manhole provides access to the inside. Available with a mixer—circulator can be installed to increase heat transfer and agitation.



VT—vacuum cooker has no equal for small batches. Tilting top easy loading. Sizes 30 to 150 gallons. Jacketed for 90 p.s.i. steam working pressure.

SPECIAL—PC Style Pressure type mix-cooker. Jacket to full 200 gal. level. Plate type heating-cooking coils arranged to act as agitator baffle plates. Entire unit removable for easy cleaning.

Hamilton offers the right kettle for any mixing or cooking job. The Cost? Reasonable and economical in the light of finished and polished fabrication. Sanitation guaranteed. Careful competent workmanship and constant inspection assures you of quality that is built-in. We'll work from your prints or create them for you on our drawing boards. Write for free Hamilton Kettle Catalogue.

ESTABLISHED 1876

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new literature

Piping, Pumps, Valves, Accessories

Impulse steam traps and strainers†. (Book) Yarnall-Waring Co.
6122 on Reader Service Slip.

General service, quick-acting non-wedging gate valves with leak-tight seals, 20 pp, (Bul E-165) Everlasting Valve Co.
6123 on Reader Service Slip.

Submersible sump pump for temporary or permanent duty, 8 pp, (Bul 5300) Deming Pump Co.
6124 on Reader Service Slip.

Free-piston, air-operated pump will handle anything that flows, 4 pp, The Crossley Machine Company
6125 on Reader Service Slip.

Miscellaneous

Correct location for a new plant†, (Guide Book) Div. of Industrial Development, Virginia Dept. of Conservation and Economic Development
6126 on Reader Service Slip.

Ultra-sanitary bulk hopper car*, 4 pp, General American Transportation
6058 on Reader Service Slip.

Slits and empties up to 20 bags per minute automatically*, 4 pp, (Lit) Wiretyer Corp.
6025 on Reader Service Slip.

Lightweight rail dockboards with adjustable-span safety locks, 2 pp, Magnesium Co. of America
6127 on Reader Service Slip.

FOOD PROCESSING CARTOON *Hall of Fame*

A second laugh

Just as the bowler is returning to men's fashions, best cartoons from past issues of FOOD PROCESSING will appear again from time to time in forthcoming issues.

The cartoons, in the opinions of the editors, are particularly humorous and will be published larger than when they originally appeared.

Undoubtedly, you too have clipped some cartoons from FOOD PROCESSING that struck your funny bone. You can tell us about them by simply checking the ballot box on the Reader Service Slip, along with a short statement indicating what your favorite cartoons are.

Then watch for them to appear in the "FP Cartoon Hall of Fame."

— Editor

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is a Pfaudler Permutit program providing
the know-how
the equipment
and the experience
for solving problems involving fluids

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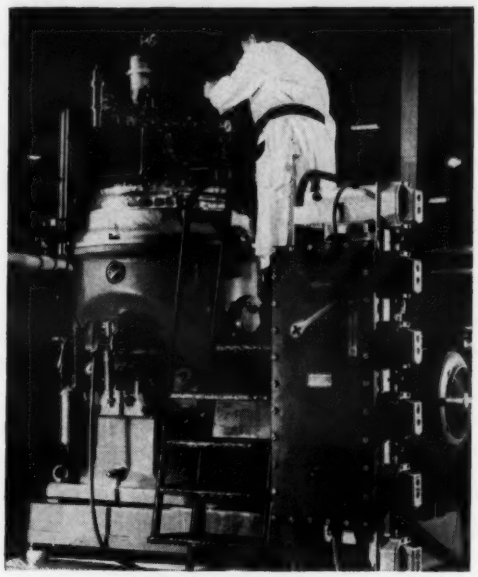

FLUIDICS AT WORK

Now, a packaged centrifuge for inplant production line testing

So that you can test our Titan centrifuge with your own products in your own production line, we've mounted a 6,000 gal./hr. capacity unit on a movable skid that is completely integrated with the required pumps, valves, controls, and other accessories.

All you need is an available 220/440 three-phase electrical service and you're in business.

This first of a series of packaged test units is available on a leasing agreement set to meet your particular needs.

They supplement a test program which has operated for some time now in our Pfaudler labs. They should prove of great value where you have products that are perishable or otherwise difficult to ship or whenever you prefer to do your own inplant testing.

We will also provide technical personnel for setting up and operating the test program.

An outstanding feature of these centrifuges is their ability to desludge themselves automatically. In normal operation you can run them continuously for weeks without a major shutdown for cleaning. For more information on the leasing program, see your local Pfaudler Permutit representative. Ask him or write direct for our centrifuge bulletin to Pfaudler Division, Department FP-129, Rochester 3, New York.

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Specialists in FLUIDICS . . .
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75 YEARS CREATING FOR TOMORROW Pfaudler

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Waste problems

(*Continued from page* 24)

to the trickling filter.

Outlet from filter to lagoons was closed and the dilution of Cloroben was thereby permitted to fill and cover the filter. The pump was shut off.

Meanwhile, 30 gallons of Cloroben were added to the lagoons and permitted to remain for three hours with all drainage shut off.

After three hours, additional Cloroben was added to the dosing tank and pump was started. This heavy concentration of Cloroben was recirculated for two hours.

Thereafter, normal operation of waste disposal system was resumed with one gallon of Cloroben being diluted daily into effluent.

All odor stopped almost immediately. Insect larvae were killed within a short time. Slime accumulations in filter bed were dissolved and discharged. Scum formation in lagoons softened, began to disintegrate and finally disappeared.

The filter gradually produced a healthy biological fauna and from that time on, complaints concerning odor and fish mortality ceased.

RENDERING

Tests being conducted to control rendering odors

The American Meat Institute Foundation is conducting a series of tests, using a pilot plant in its own laboratories, to determine if Cloroben can be used to control the problem of cooking odors.

A dilute solution of Cloroben will be recirculated in a vapor scrubber. END

Next month FOOD PROCESSING *will present the case history of how a brewery has used Cloroben to convert a waste disposal problem into a profitable by-product operation.*

LUBRIPLATE No. 630-2 Multi-Purpose Grease

ALSO PACKED IN

CONVENIENT GREASE GUN CARTRIDGES

Lubriplate No. 630-2 is a high temperature, extreme pressure, water-repellent, grease type lubricant. Ideal for the general lubrication of Industrial, Automotive, Construction, Farm and Marine Equipment. Lubriplate Grease Gun Cartridges provide an easy, quick, economical means of application. Prevent the waste and mess of hand filling. Packed 10 Cartridges in a handy carrying carton.

REGARDLESS OF THE SIZE AND TYPE OF YOUR MACHINERY, LUBRIPLATE LUBRICANTS WILL IMPROVE ITS OPERATION AND REDUCE MAINTENANCE

For nearest LUBRIPLATE distributor see Classified Telephone Directory. Write for free "LUBRIPLATE DATA BOOK"... a valuable treatise on lubrication. LUBRIPLATE DIVISION, Fiske Brothers Refining Company, Newark 5, N. J. or Toledo 5, Ohio.

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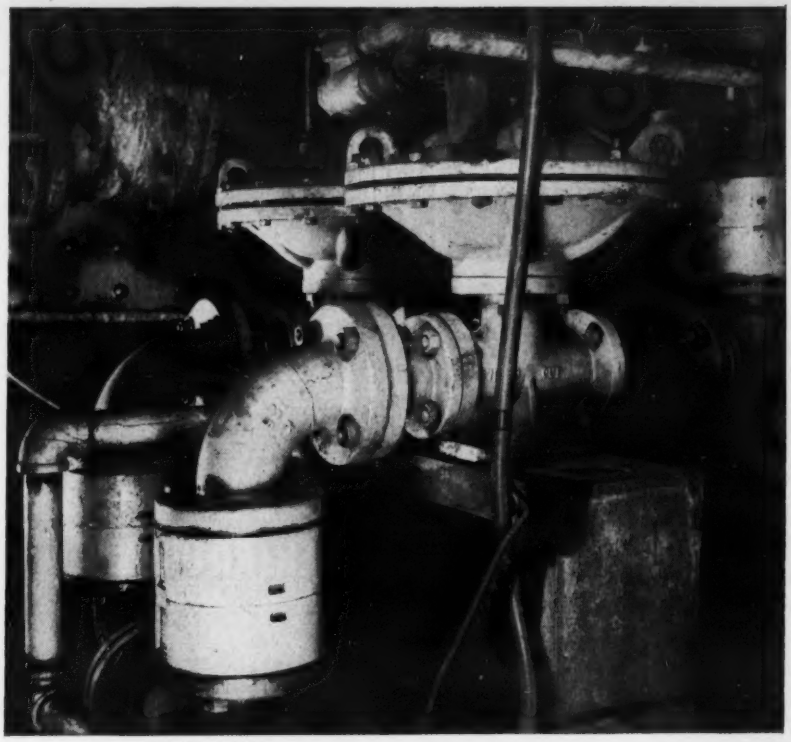

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December 1959

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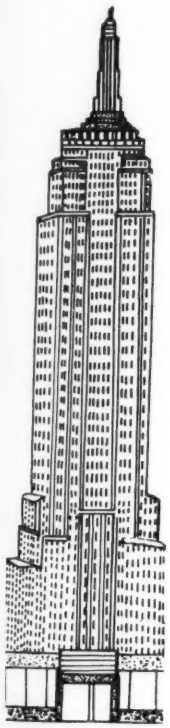

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